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APPROVED BY Daniel A. Pagán Rosa DATE _____

ABSTRACT
(Instruction on reverse side)

A total of 4,994,846 pounds of fish and shellfish were landed in Puerto Rico, with a value of \$9,140,568, during 1997. In 1998, it was estimated that a total of 4,489,613 pounds of fish and shellfish were landed with a value of \$9,331,455. In 1999, it was estimated that a total of 4,278,828 pounds of fish and shellfish were landed, with a value of \$9,140,568. Between January-March 2000 a total of 957,964 pounds were reported. Approximately 1,758 active commercial fishermen, 1,501 fishing vessels and 31,069 units of fishing gears were reported. The most abundant fishes by weight, were snapper, grunt, groupers, mackerels, tuna and dolphin. Lobster was the most abundant shellfish reported by weight, followed by conch. Lines (hand line, bottom line, long line, troll line and rod and reel) were the most productive gear during 1997-2000.

Biostatistical samples were obtained for fish and lobster. Catch composition in terms of numbers were examined. Average spiny lobster carapace lenght for females was 94 mm and for males was 99 mm. Catch per unit effort for landings and by gear it is examined.



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Dear Ms. Pierce:

Enclosed you will find original and three copies of the completion report entitled "**Puerto Rico/NMFS Cooperative Fisheries Statistics Program 1997-2000**", project number NA77F0087. If you have any questions, please contact Mr. Daniel Matos-Caraballo, at the Fisheries Research Laboratory, (787) 833-2025 or by e-mail matos_Daniel@hotmail.com.

Thank you, for your attention to this matter.

Sincerely,

Daniel Pagán Rosa
Secretary

cc: Administrator
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DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES

Final Report to the

National Marine Fisheries Service
NOAA

Entitled

**Puerto Rico/NMFS Cooperative Fisheries Statistics Program
1997-2000**

by

Daniel Matos-Caraballo
Principal Investigator
DRNA Fisheries Research Laboratory

Submitted by

Daniel Pagán-Rosa
Secretary of Department of Natural and Environmental Resources

September 2000

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I wish to express my gratitude to all the people who contribute to the completion of this report. Port agents Walter Irizarry, Jesús León, Héctor Y. López and Luis A. Rivera, who collected the data and help in the data entry process. Statistic clerk Lucia T. Vargas handled, entered and corrected the data, she also helped to make some tables of this report. To Wilfredo Torres, Biologist of the FRL, who also contributed to the data entry process. To Albaliz Mercado who helped to make some tables of this report. In particular, I wish to acknowledge the cooperation of the commercial fishermen for assisting the Fisheries Statistics Project: without their help this report would not have been possible.

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INTRODUCTION

The Fisheries Research Laboratory (FRL) of the Puerto Rico Department of Natural and Environmental Resources (DNER) monitors the commercial landings of fish and shellfish in Puerto Rico. The Fisheries Statistics Program (FSP) was implemented in 1967 under the Commercial Fisheries Research and Development Act of 1964 (PL 88-309) to collect data on the commercial fishery. Currently, this project is supported by the NOAA/National Marine Fisheries Service (NMFS) through the State/Federal Cooperative Fisheries Program, Interjurisdictional Fisheries Programs and the DNER.

The objective of the Puerto Rico/NMFS State Federal Cooperative Fisheries Statistics Program (S/F) is to maintain reporting services on the commercial finfish and shellfish resources of Puerto Rico, as well as manage and disseminate the fisheries statistics through coordination of activities between NMFS and the FRL/DNER. This includes the processing and summary of monthly landings (by species or species group, weight, value, numbers of trips, hours fishing, gear type, etc.), which is need to manage marine resources effectively. Close cooperation in these activities will avoid duplication and promote efficiency of operations.

This report includes data from January 1997 through March 2000. Raw data form 1997-98, have been submitted on 1.44 MB computer diskettes to John Poffenberger, Technical Monitor of the Research Management Division, NMFS Southeast Fisheries Science Center, Miami, Florida. The raw data of 1999-2000 have been submitted to Mr. Poffenberger by e-mail.

The Puerto Rico/NMFS SF has four principal goals:

- 1) Collect landing data from the island of Puerto Rico ensuring coverage of all coastal municipalities and their major fishing centers.
- 2) Determine the total weight of principal finfish and shellfish landed in Puerto Rico

each month.

- 3) Determine the ex-vessel value of principal finfish and shellfish species landed in Puerto Rico each month.
- 4) Manage, correct, evaluate, summarize data and prepare semiannual and annual performance reports.

- 5) Collect biostatistical data (i.e. individual lengths and weight, species composition) as needed.
6. Collect data to estimate catch per unit effort (CPUE) for landing and bistatistical data.

PROCEDURES

Commercial Landings Data

Commercial fishery landing data were collected from voluntary fishermen, fish buyers and fishing associations from around Puerto Rico. Four port agents and the principal investigator visited the 42 coastal municipalities including the islands of Vieques and Culebra, and the 88 identified fishing centers, (Figure 1). Thee data collection occurred from January 1997-March 2000. Data were collected using a landing trip ticket system (Figure 2) on a biweekly or monthly basis. Special boxes were placed in most fishing centers to enable port agents to collect trip tickets from fishermen.

Efforts were made to collect the following data: fishing date; name of fish buyer, fisherman and/or helper (to avoid data duplication); fishing license number; municipality; fishing center

(municipality landing area); number of trips; gear type; fishing effort (hours spent fishing); weight in pounds by species or taxonomic family; market value to the fisherman (price in U.S. dollars/pound); maximum and minimum fishing depth; and fishing area. Trip tickets were completed using species common names and identification was possible by using an amended version of the bilingual technical report "Common Names of Fishes in Puerto Rico" (Erdman, 1987). A numerical system of species identification was developed to correspond with species codes used in Erdman's publication (additional species and their numbers are included in Appendix 1). Fishermen usually landed fishes in the round (not eviscerated), excepting deepwater snapper and large grouper that they usually landed gilled and gutted. Lobster, oyster and octopus were also landed in the round, and conch weights included meat only. Land crab statistics were reported in number of dozens with each dozen assumed to produce 1 lb. of meat. Some landings were reported as one of four classes of fish (first, second, third and "trash" fish) reflecting their market value: "trash" fish are perceived to have little or no market value. Classification varied somewhat by region but the following descriptions were used to characterize each class broadly: first class fish included large snappers, grouper, grunt, trunkfish and hogfish; second class included small snapper and grouper, parrotfish, goatfish, and triggerfish; third class included smaller individuals of second class fish and large squirrelfish. The "trashfish" category included butterflyfish, angelfish, surgeonfish, small squirrelfish and small fishes of a large number of species (Matos and Sadovy, 1990).

Catch per unit of effort (CPUE) was evaluated in two ways: 1) for landings data by calculation of total pounds per trip, making a subsample by month, using only those landings trip tickets that clearly indicated a single trip; 2) use of the biostatistical sampling program (explained in biostatistical procedures).

Landings data were entered an MS-DOS computers, using Microsoft FoxPro and DBASE III+; checked against the original landing trip tickets; corrected and analyzed using DBASE III+, Microsoft FoxPro and Microsoft Excel. All data presented in this report are raw data. As in previous years (1988-97) a correction factor was used in calculations to correct for under-reporting. The correction factor was expressed as the percentage of fishermen that regularly cooperated with statistics divided by the total number of active fishermen in the Island of Puerto Rico. The correction factor for 1997-2000 was 78%. Correction factors before 1997 are discussed in Matos and Sadovy (1990; 1991) and Matos (1992; 1993; 1995, 1998).

Commercial Biostatistical Data

Biostatistical data from finfish and spiny lobster were collected by port agents three days per week. Each individual was identified by species to determine catch composition. Finfishes were measured in fork length (FL) and spiny lobster in carapace length (CL), both in millimeters (mm), and weighed in grams. Data were recorded on the field and copied in the biostatistical data sheets using the format shown in Figure 3. The form was designed to facilitate entry and processing of effort data. Biostatistical data were entered in Trip Interview Program (TIP) developed by NMFS Southeast Science Center. Later, the data stored in TIP was converted to .dbf format and analyzed using Microsoft Foxpro and Microsoft Excel. The data collected include date, name of fisherman, fishing area, depth, gear, species, length, weight and effort by gear type. When possible, the whole catch was identified at species level, weight (g), identified by sex visual gonad stage and length measured in millimeters. When measuring the whole catch was not possible (incomplete sample), port agents tried to identify the species level, and tried to sample at least 50 randomly selected

individuals measured and weighed. However, sometimes fishermen or fish buyers did not allow the port agents to sample 50 individuals. Thus, some samples resulted in $n < 50$. Measurements on complete catches are more difficult to obtain when the catch is particularly large, because fish buyers or fishermen wish to remove, sell or store fish and/or shellfish rapidly. Biostatistical CPUE data was handled as follows: catch is total capture expressed in pounds. Effort is expressed by gear:

- a) net categories are measured as "fathom/hour".
- b) trap categories are measured as "trap/day".
- c) hook categories are measured as "hook/hours".
- d) diving categories are presented as "man/hours".

Determination of Number of Active Fishermen in 1997-99.

To make an estimate of the number of active fishermen during 1997-99, it was used the 1995-96 census data were collected by FRL through a "Saltonstall-Kennedy Project" (Matos, 1996). Unfortunately, no funds had been available since 1996 to make a current census. The port agents of the mentioned project visited all Puerto Rico fishing centers to identify, and interview all commercial fishermen available. Fishermen were interviewed at dockside, at association meetings, or in their homes. When fishermen did not cooperate, port agents would try to get their information from other fishermen contacts, neighbors and/or friends.

Other Data Users

The fishery's data were used for scientific investigations by various entities such as: the University of Puerto Rico (UPR), Mayaguez Campus (Marine Sciences Department), Sea Grant

College Program, NOAA/NMFS Caribbean Fisheries Management Council, P.R. Department of Agriculture (Agro-Statistics Division, Fisheries Development Program and Mayaguez Regional Office). P.R. Department of Natural and Environmental Resources, Government Developing Bank, Promoting Cooperative Administration, Fish and Wildlife Service U.S. Department of the Interior, U.S. Coast Guard, NOAA/NMFS SEFSC, Food and Agriculture Organization of the United Nations. Fishery data was also requested by two local newspapers (The San Juan Star, and El Nuevo Día) and T.V. news of Telemundo Channel 2, WIPR Channel 6 to provide information to the general public. Elementary, secondary school level students, and college (Antillean College, Interamerican University, Trend University, UPR Humacao Campus) students requested fishery statistics data. Commercial fishermen also used fishery statistics data. Private institutions used the statistics data, for example; Raytheon Catalytic; Enviroconsult and Coastal Planning Inc. Publications produced using data wholly or partially provided by this project are listed in the Appendix 2.

RESULTS

Commercial Landings Data

Using the correction factor of 78%, in Puerto Rico during 1997, it was estimated that a total of 4,994,846 pounds of fish and shellfish were landed, with a market value of \$9,140,568. In 1998, it was estimated that a total of 4,489,613 pounds of fish and shellfish were landed, with a value of \$9,331,455. In 1999, it was estimated that a total of 4,278,828 pounds of fish and shellfish were landed, with a value of \$9,140,568 (using the correction factor of 78%).

Raw data shows that from January-December 1997 a total of 3,895,980 pounds was reported, (Table 1-A), for 1998 a total of 3,501,898 pounds (Table 1-B), for 1999 a total of 3,337,486 pounds

(Table 1-C) and for January-March 2000, a total 957,964 pounds was reported. The correction factor of 78% of total fishermen cooperating with the Program in 1998, is the highest since 1988 when 56% of fishermen cooperated.

A total of 38,470 trip tickets was collected throughout 1997; 32,839 for 1998; 35,545 for 1999, and from January-March 2000, 9,674 were collected (Table 2). Probably more tickets for January-March 2000, will be collected during the following months, due to the delay of some fishermen. Landings were principally comprised by five species of shellfish and 36 categories of species, or families of finfish (Figure 2), although a total of 142 finfish groups and/or species and 11 shellfish species were reported by fishermen (Table 3).

The most important fish, in terms of percentage of total pounds landed (fish and shellfish), for 1997-99, was the yellowtail snapper (*Ocyurus chrysurus*) 7.5%, silk snapper (mainly *Lutjanus vivanus* and *Etelis oculatus*) 7.4%, lane snapper (*Lutjanus synagris*) 6.3%, mackerel species (*Scomberomorus cavalla* and *Scomberomorus regalis*) 5.4%, various species of tuna 5.3%, dolphinfish (*Coryphaena hippurus*) 4.0%, various species of grouper, principally red hinds (*Epinephelus guttatus*), reported 3.8%, various species of grunts mainly the white grunt (*Haemulon plumieri*) 3.7%, various species of parrotfish 2.7%, and various species of trunkfish 2.4% (Table 1-A, 1-B and 1-C). The most important of the shellfish species were the spiny lobster (*Panulirus argus*) 8.5% of total reported landings, and the queen conch (*Strombus gigas*) 6.7% (Tables 1-A, 1-B and 1-C).

Matos (1998) mentioned that several fish and shellfish species, usually discarded by fishermen in the past, have now become commercial species. These species did not have market value years ago, but are now sold at reasonable prices. Table 1-A shows that the squirrelfish (e.g. *Holocentrus ascensionis* and *H. rufus*) was sold in 1997 at an average price of approximately \$1.21 per pound. Shellfish species in the same situation are *Carpilius corallinus* and *Mythrax spp* (Table

3). On the other hand *Acanthurus spp*, *Holocanthus ciliaris*, *Pomacanthus arcuatus*, and *P. paru* are fished in the municipality island of Vieques, to be sold in the market of Saint Croix and Saint Thomas, USVI.

During 1997-99, prices varied markedly by municipality and by species (Tables 4-A, 4-B, and 4-C). For example, in 1997, the lowest average price per pound for fish and shellfish was obtained on the west coast, in the municipality of Aguadilla at \$1.18 (Table 4A), and the highest average price was obtained in the South Coast, in the municipality of Patillas at \$2.52 (Table 4-B). The highest fish price value during 1997-99, was the silk snapper, \$2.28 per pound in 1997 (Table 1-A), \$2.58 in 1998 (Table 1-B), and \$2.87 in 1999 (Table 1-C). The most valued shellfish during 1997-99, were lobsters, \$3.97 per pound in 1997 (Table 1-A), \$5.44 in 1998 (Table 1-B), and \$5.45 in 1999 (Table 1-C). The most productive of the 42 municipalities during 1997-99, was Cabo Rojo accounting for 21% of the total landings, by weight (Tables 4-A, 4-B, and 4-C). The west coast, reported 37% of the total weight, was the most productive, followed by the south, 32%, east, 19% and north, 12% (Tables 4-A, 4-B, and 4-C).

The gear types (as defined in Matos and Torres, 1989), which accounted for the highest percentage of landing, by weight during 1997-99, were lines (hand line, troll line, long line and rod and line together) taking 39.1% (4,200,040 pounds) of the total catch (Tables 5-A, 5-B and 5-C). Lines were followed by traps (fish pot and lobster pot) taking 22.4% (2,404,429 pounds) of the total reported catch (Tables 5-A, 5-B and 5-C). Traps were followed by nets (beach seine, gill net, cast net and trammel net) that accounted for the 21.9% (2,347,931 pounds) of the total reported catch (Tables 5-A, 5-B and 5-C). Nets were followed by divers (skin and SCUBA), this gear class fished 16.4% (1,762,274 pounds) of the total reported catch Tables (5-A, 5-B and 5-C). The gears by hand

and land crab trap accounted for less than 0.02% of the total landings.

Landings reported by species and by month are in Tables 6-A, 6-B and 6-C. Some species were reported in greater quantities in some months of the year. The dolphinfish and the red hind were caught mostly during December and January. The tunas (Scombridae) were caught in greater quantities during May and June. The yellowtail snappers were caught in greater quantities during March-May and September-November. Fishing activity was affected during the hurricane season, especially during September. Hurricane Georges affected Puerto Rico in September 21-22, 1998. Most coastal areas were affected with no electricity during various weeks, also the properties of many fishers were affected. Three areas in the west coast where traditionally occurred red hind sexual aggregations were closed to fishery from December 1 - February 28. Started in 1997, the conch fishery is close for the whole Island from July 1 - September 30. However 39,833 pounds of conch were reported during the close season in 1997, and pounds 20,455 were reported in the closed season of 1998-99.

A total of 88,154 trips referred to a single fishing trip (number of trips = 1) was reported. A subsample of this data by month was made. Fishing trips are generally of a half-day duration. The CPUE for landings in 1997 was 72 pounds per trip, in 1998 it was 54 pounds per trip, and in 1999 it was 53 pounds per trip (Tables 7-A, 7-B and 7-C). The month with the highest landing average per single trip was October 1997 with 92 pounds (Table 7-A). A trend to decreased in CPUE was observed.

Commercial Biostatistical Data

A total of 34,607 finfish individuals and 2,651 spiny lobsters were measured and weighed during 1997-99 (Tables 8-A, 8-B and 8-C). Approximately 3,000 finfish 400 lobsters were

measured and weighed during January-March 2000. Sex determination of fishes in the field has been difficult because of the reluctance of fishermen to permit this activity, and the general limitation in available time for measuring samples, and difficulties in assessing any but the ripest individuals, for sex. However, was attempted to collect a minimum of 25 samples of gonads monthly for *Ocyurus chrysurus*, *Lutjanus synagris*, *Sparisoma chrysopterum* and *Sparisoma viride* (during 1997) and *Scomberomorus cavalla*, *S.regalis* and *Lutjanus analis* (during 2000). The success of this effort contributes to determine the minimum size of sexual maturation (MSSM) for the mentioned species. *Ocyurus chrysurus* females have a MSSM of 248 mm fork length (FL), males have 224mm FL (Figuerola, Matos-Caraballo and Torres, in press). *Lutjanus synagris* females have a MSSM of 185mm FL and males have 147 mm FL (Figuerola, Matos-Caraballo and Torres, in press). *Sparisoma chrysopterum* and *Sparisoma viride* are protogenetic monandric hermaphrodites, thus their first sexual reproduction is always as a female. The MSSM of the *S. chrysopterum* females was 235mm FL and for *S. viride* females was 205 mm FL (Figuerola, Matos-Caraballo and Torres, in press).

Tables 8-A, 8-B and 8-C, lists and ranks all fish species and lobster, as well as the number of the total biostatistical samples taken for each species, and weights. The species most frequently measured from 1997-2000 were *Ocyurus chrysurus*, *Haemulon plumieri*, *Lutjanus synagris*, *Panulirus argus*, *Pseudopeneus maculatus*, *Sparisoma chrysopterum*, *Lutjanus vivanus*, *Sparisoma viride*, *Scomberomorus regalis* and *Calamus pennatula*.

The most measured species by gear type and weight data for complete and incomplete samples by year are shown in Tables 9-A, 9-B and 9-C. These tables show that for the most measured individuals, hand and troll line caught 33% of the total weight. Followed by pots with

31%, nets with 25%. And diving with 11%.

Thompson and Munro (1983a) indicated that *Ocyurus chrysurus* reaches MSSM at around 260mm FL. Figuerola, Matos and Torres indicated that *Ocyurus chrysurus* females reaches MSSM at around 248mm FL and males at 224mm FL. During 1997, 21% of individuals were taken below 224mm FL, during 1998 were taken 4% and during 1999 were taken 23%.

Sex ratio data of *P. argus* by month and by year are shown in Tables 10-A, 10-B and 10-C. *P. argus* has been protected under federal and local government fishery management plan (FMP), for approximately the last 12 years. These management plans prohibit the capture and/or possession of *P. argus* below 89mm (3.5 inches) of carapace length. During 1997, approximately 35% were taken below the minimum legal size (males and females combined). During 1998, approximately 26% were taken below the minimum legal size (males and females combined). During 1999, approximately 15% were taken below the minimum legal size (males and females combined). Another sign of the recovers of this species occurred in October- November 1999. It, was observed the biggest number lobster caught during their migration associated with the wave surge action. The quantity of lobster landed decrease the average price per pound from \$5.50 to \$2.00.

Epinephelus guttatus is the most abundant grouper species reported in Puerto Rico. Thompson and Munro (1983b) mentioned that *E. guttatus* reaches MSSM at approximately 250mm FL. Sadovy et. al. (1994) studied *E. guttatus* from 1987-92, reporting that MSSM is 215mm FL. *E. guttatus* taken below the MSSM determined by Sadovy et. al. (1994), were 6% of the biostatistical samples during 1997, 4% for 1998 and 3% for 1999.

Boardman and Weiler (1979) mentioned that *Lutjanus vivanus* females reach MSSM at approximately 470mm FL. On the other hand, Figuerola (1991) reported that *L. vivanus* females

reach MSSM at 410mm FL. Biostatistics data shows that approximately 98% of total individuals of *L. vivamus* sampled (males and females) were taken below the MSSM of 410mm for 1997. In 1998 was 99% and in 1999 was 95% .

Biostatistical effort data is shown in Tables 11-A, 11-B and 11-C. The gear efforts were analyzed only when $n \geq 4$. Diving, hand line and troll line were the most effective gears during 1997-99.

Determination of Number of Active Fishermen during 1997-99

Using the information of the 1995-96 census (Matos 1996), a total of 1,758 active commercial fishermen was identified by FRL personnel. They reported 31,069 fishing gear units (Table 13). Approximately 8% of the total identified fishermen in this research refused to be interviewed, although they were accounted and classified in their fishermen's category (full time, part time or helper). Information concerning fishing gears of these non-cooperative fishermen, in some cases were estimated by port agents (thru reports from cooperative fishermen). Since 1979, the number of fishermen has not changed significantly.

DISCUSSION

Commercial Landings Data

Commercial landings reported data have been around two millions pounds from 1987-94 (Matos, in press A.) Throughout 1997-99, it was observed that fishermen cooperated more with the Statistics Program, resulting in 3.8, 3.5 and 3.3 millions pounds reported. One possible reason to explain the increased landings would be the increases of 500 more active commercial fishermen that cooperated with FSP during 1987-94. Also, the increase in participation occurred because the

PRDNER and the Puerto Rico Department of Agriculture have provided economical help to fishermen who regularly cooperated with the FSP. When we compare the landings reported in late 70's and early 80's (around 5 million-7 million pounds), with the reported landings of 1987-96, an indication of overfishing is observed.

Landings by species for 1997-99, showed that snappers, grunts, groupers, parrotfishes, mackerels, dolphinfish and trunkfishes were the most reported groups by weight in the commercial fisheries.

Several species discarded by fishermen in the past, have now become commercial species (e.g. *Holocentrus ascensionis*, *H. Rufus*, *Holocanthus ciliaris*, *Carpilus coralinus* and *Mythrax spp*). Thus species considered with no market value in the past, are now easily sold at good price today. Probably these species are now marketable due to the decrease in landings, and an increase in the demand of more fresh fish products. This fact is another indication of overfishing.

The fish market of Saint Croix and Saint Thomas USVI, purchase the Vieques landings of *Acanthurus spp*, *Holocanthus ciliaris*, *Pomacanthus arcuatus*, *P. paru* and many juvenile reef fish species. The mentioned species are subject to severe fishing pressure. Thus, the FSP must continue to monitor the exploitation of these resources.

The municipality of Cabo Rojo and the West coast have continued to be the most productive municipality and coast respectively since 1972 (Weiler and Suárez-Caabro, 1980; Collazo and Calderón, 1988; Matos and Sadovy, 1990 and 1991; Matos, 1993; Matos, 1995;Matos, 1998).

Various storms and hurricanes passed close to Puerto Rico during September and October 1997-99, causing ocean surge action affecting the fishing activity. Hurricane Georges affected severely Puerto Rico in September 21-22, 1998. Many coastal areas did not have electricity for

various weeks. One example of this problem was the Punta Guanajibo area, where is located the FRL. This area had not electricity during approximately five weeks. Many fishers were impacted by the partial or total destruction of their properties.

Traps caught 22.4% of the total catch during 1997-99. This gear continued to show a decreasing trend in their catch percentages since 1982 (Matos and Sadovy, 1990, and 1991, Matos, 1992; 1993; 1995, 1998), when fish traps alone caught 71.2% of the total pounds reported (Collazo and Calderón, 1988). On the other hand, an increasing trend was observed in the percentage of reported landings taken by all lines combined, when compared with year 1982, in which the percentage was 12.4% (Collazo and Calderón, 1988) to 391% during 1997-99. Nets have shown a similar trend. For example the gill nets and trammel nets caught 2.7% in 1982 (Collazo and Calderón, 1988), while in 1997-99 they caught 21.9% Diving show a trend to increase. Principal Investigator and port agents of this project observed that approximately 90% of the new and young commercial fishers are divers.

During the closed season for the queen conch (*Strombus gigas*) during 1998-99, it was reported 60,288 pounds of this species. Definitively it is needed more education and enforcement to protect this resource.

In 1995 the annual average pounds per trip were 80. In 1996, the annual average pounds per trip were 63. In 1997, the annual average pounds per trip were 72. On the other hand the result for 1998 was 54 pounds annual average pounds per trip and 53 for 1999. These results indicate that the CPUE shown a decrease trend. The total reported landings in pounds for 1998 and 1999 also shown a decrease trend. Principal Investigator observed that the number of boats with 30 feets length or larger has been decreasing very rapidly. The mentioned boats were used mainly for the silk snapper

fishery. This report shows that the silk snapper is not the most landed in pounds group since 1970's (Weiler, et. al, 1980). The mentioned category is mostly *L. vivanus*. Approximately 96% of this species is caught before reach the MSSM.

Commercial Biostatistical Data

During 1997-99 biostatistical data showed that less than 17% of the individuals of *O. chrysurus* sampled were caught below the MSSM. On the other hand *O. chrysurus* has a minimum legal size of 304mm total length for federal waters. Although specimens of *O. chrysurus* for this report include captures in both state and federal waters, this information indicates that enforcement for this species should be improved.

After various years of protection of *P. argus*, approximately 51% of lobsters caught in Puerto Rico during 1989-91 were taken below the 89mm (Matos, In press B). During 1992-94 data shows that approximately 43% of *P. argus* caught, were below the minimum legal size. From 1995-97, data shows 33% of *P. argus* was caught below minimum legal size (Matos, 1998). During 1998, data shows 26% of *P. argus* was caught below minimum legal size and during 1999 was 15%. Matos (in press) reported that this improvement of the resource probably occurred due to a bigger effort to enforce the Lobster FMP by DNER's rangers .

Probably, *E. guttatus* juvenile individuals are not caught in high percentages because this species is heavily fished during the reproductive aggregation period. On the other hand, between 1988-90, biostatistical samples showed that around 30% of *E. guttatus* were caught below the MSSM (Matos, in press C). Sadovy et. al. (1994) mentioned that heavy fishing pressure on the *E. guttatus* aggregations diminish the reproductive success, probably causing a poor recruitment into the population over the last few years. In 1993, a federal regulation to protect one of the *E. guttatus*

aggregation area was put into effect, off the west coast of Puerto Rico. This area is closed from December 1 - February 28 of each year to all fishing pressure. In 1996, another two areas in federal waters were close to protect the aggregation of *E. guttatus*.

Approximately 97% of individuals of *L. vivanus* were caught before reaching sexual maturity during 1995-99. This tendency has been observed in Puerto Rico since 1988. As it was mentioned before, this species is not the number one landings in pounds reported since 1970's and also the big boats (30 feet length or larger) were decreasing very rapidly. The average price per pound also increased from \$2.28 in 1997 to \$2.87 in 1999. Matos and Sadovy (1991), Appeldoorn et. al. (1992), and Matos (1992; 1993;1995;1998) have suggested that *L. vivanus* need urgently management action.

Comparing the biostatistics CPUE data by gear with 1992, it is evident that the averages of mean gear amount for fish pot (trap) are very similar (33 traps/trip in 1992 and to 35 in 1999). On the other hand a fish trap caught an average of 6 pounds during the seventies (Matos, in press E) and for the period of this report caught only 0 .56-1.33. Once more, a decrease in the use of the traps it is observed. Number of samples for gill nets and trammel nets were low because these gears were used during the nights, with landings occurring approximately between 1:00 A.M. - 4:00 A.M., many occurring in landing areas that were unsafe, and port agents were not able to sample under the mentioned conditions. Troll line, hand line and SCUBA divers were very efficient gears.

Determination of the Number of Active Fishermen in 1997-99

The number of active fishermen in Puerto Rico increased by 395 fishermen. Matos (1993) mentioned that from 1990-92, a decreasing trend was observed in the number of active commercial fishermen. In 1993-94, 223 more fishermen were accounted for than for 1992. Since 1979, the

number of fishermen has not changed significantly. However, funds are needed to make a new commercial fishing census.

CONCLUSION

Since 1987, Puerto Rico's reported landings of fish and shellfish have continued to be in the vicinity of 2-3 million pounds. In 1979, reports of landings in Puerto Rico recorded 7,212,000 pounds of fish and shellfish. During the decade of the eighties, landings decreased consistently. During 1995-97, reported landings were ranged between 3,617,039 to 3,895,980 pounds of fish and shellfish. During the 1997-99 the landings reported shown a little trend to decrease to 3,895,980 to 3,337,486. Although the landings data shown some stability in the fishery resource, signs of overfishing are still present. For example, landings and biostatistical information have shown that several fish and shellfish species that were discarded by fishermen in the past and that did not have market value (e.g. *Holocentrus ascensionis*, *H. rufus*, *Acanthurus sp*, *Carpilius corallinus*) are now sold easily. These species are probably now important because of the decreased landings of the traditional valuable species.

Another set of problems associated with the fishery resources is observed thru biostatistical data, which shows species such as *Lutjanus vivanus* that need urgently management. The FMP for *P. argus* shows to be enforced. On the other hand the 60,288 pounds of *S. gigas*, indicated the need of education and enforcement for this FMP.

After the analysis of these facts, it is concluded that during 1997-99, several fishery resources in Puerto Rico have continued to decline, despite the stable number of landings reported and despite an increase in the number of active fishermen. The information presented in this report urges the

need for measures to protect the fishery resources of Puerto Rico, including the improvement of the enforcement of the existing FMP.

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- Figuerola, M. , D. Matos-Caraballo and W. Torres In press. Maturation and reproductive seasonality of four reef fish species in Puerto Rico. Proc. Gulf and Carib. Fish. Inst. 50:
- Matos, D. In press A. Status of the fishery in Puerto Rico, 1990- 93. Proc. Gulf and Carib. Fish. Inst. 47:
- Matos, D. In press B. Comparison of Size of Capture Using Trap and Diving of Spiny Lobster (Panulirus argus) in Puerto Rico during 1989-91. Proc. Gulf and Carib. Fish. Inst. 45:
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APPENDIX 1. SPECIES ADDED TO ERDSMAN'S LIST.

04/30/00

List of Fish

Carcharhinidae

- 400 - Carcharhinus perezi
- 401 - Carcharhinus springeri
- 402 - Carcharhinus obscurus
- 403 - Carcharhinus limbatus
- 525 - Mustelus canis

Muraenidae

- 440 - Enchelycore nigricans
- 441 - Gymnothorax vicinus
- 442 - Gymnothorax moringa

Congridae

- 450 - Cynoponticus savanna

Synodontidae

- 460 - Synodus synodus

Haemulidae

- 500 - Haemulon carbonarium
- 501 - Haemulon parra
- 502 - Haemulon bonariense
- 503 - Orthopristis rubra
- 505 -

04/30/00

506 - Haemulon melanurum

507 - Haemulon striatus

Centropomidae

515 - Centropomus pectinatus

Clupidae

540 - Harengula clupeola

Scorpaenidae

545 - Scorpaenodes caribbaeus

Sparidae

551 - Calamus penna

552 - Calamus calamus

553 - Calamus spp.

Chaetodontidae

560 - Chaetodon ocellatus

561 - Chaetodon striatus

574 - Chaetodon sedentarius

Pomacanthidae

575 - Holacanthus tricolor

576 - Pomacanthus arcuatus

577 - Pomacanthus paru

578 - Holacanthus bermudensis

Pomacentridae

580 - Microspathodon chrysurus

581 - Stegastes partitus

Echeneididae

590 - Remora remora

Carangidae

601 - Caranx hippos

603 - Uraspis secunda

604 - Selene vomer

605 - Seriola fasciata

606 - Alectis crinitus

Holocentridae

625 - Holocentrus rufus

Acanthuridae

651 - Acanthurus chirurgus

652 - Acanthurus coeruleus

Labridae

660 - Halichoeres garnoti

661 - Halichoeres maculipinna

662 - Halichoeres bivittatus

663 - Xvrichtys martinicensis

664 - Xvrichtys novacula

Scaridae

675 - Sparisoma chrysopterum

676 - Scarus vetula

677 - Sparisoma aurofrenatum

678 - Scarus taeniopterus

679 - Sparisoma rubripinne

680 - Scarus croicensis (iserti)

Ostraciidae

700 - Acanthostracion quadricornis **

701 - Acanthostracion poligonius **

702 - Lactophrys bicaudalis

703 - Lactophrys triqueter

** From 1990 were reclassified as genus Lactophrys.

Lutjanidae

710 - Lutjanus purpureus

Ephippidae

715 - Chaetodipterus faber

Balistidae

725 - Aluterus schoepfii

726 - Aluterus scriptus

727 - Cantherhines macrocerus (Hollard)

728 - Monacanthus setifer = Stephanolepis setifer

729 - Balistes capriscus

04/30/00

730 - Aluterus monoceros

Tetraodontidae

740 - Canthigaster rostrata

741 - Sphoeroides greeleyi

Serranidae

750 - Mycteroperca tigris

751 - Mycteroperca bonaci

752 - Mycteroperca interstitialis

753 - Dyplectrum formosum

754 - Hypoplectrus puella

755 - Serranus tortugarum

756 - Diplectrum bivittatum

757 - Serranus phoebe

758 - Hypoplectrus nigricans***

759 - Hypoplectrus unicolor

*** From 1990 was reclassified as species Hypoplectrus unicolor

Sciaenidae

775 - Umbrina coroides

776 - Bairdiella ronchus

Classified

795 - Other fishes

796 - First class

797 - Second class

798 - Third class

799 - Trash fish

Diotontidae

- 820 - Diodon holacanthus
- 821 - Chilomycterus antennatus
- 822 - Chilomycterus antillarum

Bothidae

- 830 - Paralichthys tropicus
- 831 - Bothus ocellatus

Grammistidae

- 840 - Pseudogramma gregoryi

List of Shellfish

- 900 - Strombus gigas
- 901 - Panulirus argus
- 902 - Octopus spp.
- 903 - Crassostrea rhizophorae
- 904 - Cardisoma quanhumi (land crab)
- 905 - Other shellfish
- 906 - Crab (marine)
- 907 - Clams
- 908 - Shrimp
- 917 - Mithrax spinosissimus
- 918 - Scyllarides aequinoctialis
- 919 - Scyllarides nodifer
- 920 - Calappa flammea
- 921 - Fasciolaria tulipa
- 930 - Arenaeus cribrarius
- 931 - Panulirus guttatus
- 932 - Cittarium pica
- 933 - Panulirus laevicauda

APPENDIX 2. List of Publications that used data from Puerto Rico Fisheries Statistics in 1997-2000.

- Figueroa, M. , D. Matos-Caraballo and W. Torres In press. Maturation and reproductive seasonality of four reef fish species in Puerto Rico. Proc. Gulf and Carib. Fish. Inst. 50:
- Matos, D. In press. Overview of Puerto Rico's Small-Scale Fisheries Statistics 1994-97. Proc. Gulf and Carib. Fish. Inst. 51:
- Matos, D. In press. Puerto Rico Fishery Census, 1995-96. Gulf and Carib. Fish. Inst. 51:
- Matos, D. In press. Overview of the Spiny Lobster, *Panulirus argus*, Commercial Fishery in Puerto Rico during 1992-98. Proc. Gulf and Carib. Fish. Inst. 52:
- Matos, D. And J.M. Posada. In press. Current Status of the Tiger Grouper (*Mycteroperca tigris*) Fishery at Vieques Island, Puerto Rico. Gulf and Carib. Fish. Inst. 51:
- Rosario A. and D. Matos. In press. Encuesta sobre la pesca del diente de sable (*Mycteroperca tigris*) en Vieques, Puerto Rico, durante 1996-97. Memorias del I Simposio de Recursos Naturales y Ambientales. Dept. Rec. Nat. Y Amb. de PR. 13 de marzo de 1998.

TABLES

TABLE I-A. LANDINGS REPORTED BY SPECIES AND BY COAST IN PUERTO RICO DURING 1997.

SPECIES	NORTH		EAST		SOUTH		WEST		TOTAL	
	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P
FISH										
TUNA	21,724	1.56	5,651	1.23	3,653	1.08	185,340	0.81	216,568	1.17
BALLYHOO	4,793	1.45	9,201	0.98	26,163	1.18	18,278	0.88	58,436	1.12
GRUNTS	10,698	1.80	43,207	1.34	58,807	1.47	51,440	0.79	164,152	1.40
HOGFISH	2,322	2.66	12,549	1.82	18,734	1.94	33,482	1.52	69,087	1.99
TRUNKFISH	2,531	2.51	14,241	1.40	23,164	1.62	42,294	1.89	82,230	1.86
DOLPHINFISH	13,373	2.13	2,333	1.96	53,764	1.13	87,417	1.03	166,887	1.56
SQUIRRELFISH	6,506	1.35	3,486	1.39	7,546	1.19	4,094	0.89	21,632	1.21
MULLET	26,335	1.29	2,285	1.45	15,715	1.13	11,248	0.84	55,583	1.18
JACKS	25,747	1.55	10,673	1.13	8,778	1.08	37,238	0.91	82,436	1.17
PARROTFISH	3,644	1.96	15,277	1.38	46,292	1.46	46,051	0.82	111,266	1.41
GROUPERS										
RED HIND	8,197	2.40	20,235	1.84	16,700	1.87	15,091	1.73	60,223	1.96
NASSAU GROPER	2,486	1.63	1,332	2.03	616	1.55	11,079	1.19	15,513	1.60
GROPER CATEGORY	12,157	2.32	10,628	1.87	11,377	1.88	45,039	1.50	79,201	1.89
MOJARRA	13,483	1.54	3,491	1.47	3,388	1.27	3,406	0.81	23,768	1.27
SNAPPERS										
LANE SNAPPER	20,119	2.46	35,803	1.88	174,367	1.64	40,172	1.65	270,461	1.91
YELLOWTAIL SNAPPER	56,189	2.38	74,133	1.76	88,727	1.63	54,774	1.51	273,823	1.82
SILK SNAPPER	45,938	2.42	9,223	2.02	23,635	2.48	207,111	2.19	285,907	2.28
MUTTON SNAPPER	9,135	2.30	10,279	1.84	36,647	1.59	20,522	1.47	76,583	1.80
OTHER SNAPPER	21,545	2.41	14,920	1.82	20,244	1.77	26,091	1.52	82,800	1.88
TRIGGERFISH	12,377	1.85	11,362	1.51	26,595	1.49	22,853	1.09	73,187	1.49
BARRACUDA	7,589	1.47	2,242	1.11	15,081	1.38	2,935	1.39	27,847	1.34
PORGY	1,043	1.66	8,452	1.55	14,056	1.36	4,912	0.99	28,463	1.39
SNOOK	21,854	1.66	8,038	1.22	11,216	1.44	11,788	1.19	52,896	1.38
TARPON	1,432	0.96	0	0.00	0	0.00	0	0.00	1,432	0.96
GOATFISH	944	2.10	5,481	1.70	7,479	1.53	4,908	0.63	18,812	1.50
SARDINES	22,918	0.95	729	0.72	2,331	1.01	6,496	0.93	32,474	0.90
MACKERELS	37,853	1.68	47,162	1.53	67,393	1.33	51,480	1.26	203,887	1.45
SHARKS	11,878	1.55	5,712	1.01	15,866	1.12	27,812	0.88	61,268	1.14
MARGATE	685	2.03	471	1.41	2,009	1.55	445	0.86	3,610	1.46
CLASSIFIED										
FIRST CLASS	2,762	2.00	79,811	1.83	15,846	1.12	43,272	1.20	141,691	1.54
SECOND CLASS	619	1.65	48	1.00	27,572	0.54	73,809	0.85	102,048	1.01
THIRD CLASS	1,344	1.08	117,653	1.04	2,197	0.76	887	0.79	122,081	0.92
TRASH	245	1.10	157	0.91	10	0.42	1,604	0.35	2,016	0.70
OTHER FISHES	19,207		10,953		163,759		54,061		247,980	
TOTAL FISHES	459,672	1.92	597,218	1.59	1,009,727	1.52	1,249,629	1.31	3,316,246	1.59
SHELLFISH										
CONCH	2,539	2.67	66,397	1.72	50,510	1.86	119,441	2.11	238,887	2.09
LAND CRAB	3,090	14.94	1,489	13.54	2,761	11.61	2,726	14.76	10,066	13.71
LOBSTER	11,639	4.60	61,721	3.93	130,560	3.42	80,302	3.93	284,222	3.97
OYSTER	0	0.00	44	3.19	138	2.32	426	2.00	608	1.88
OCTOPUS	1,754	1.67	1,996	1.69	31,825	1.78	3,165	1.00	38,740	1.69
OTHER SHELLFISH	2,691	3.58	779	2.06	1,144	2.81	2,597	1.83	7,211	2.57
TOTAL SHELLFISH	21,713	4.62	132,426	3.43	216,938	2.92	208,657	3.37	579,734	3.59
TOTAL	481,385	2.10	729,644	1.93	1,226,665	1.86	1,458,286	1.58	3,895,980	1.87

* P/P = Average Price Per Pound

TABLE I-B. LANDINGS REPORTED BY SPECIES AND BY COAST IN PUERTO RICO DURING 1998.

SPECIES	NORTH		EAST		SOUTH		WEST		TOTAL	
	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P
FISH										
TUNA	23,339	1.58	6,814	1.44	5,657	1.31	164,519	1.00	200,329	1.33
BALLYHOO	4,431	1.29	5,278	1.15	17,232	1.31	19,408	1.17	46,349	1.23
GRUNTS	7,499	1.90	28,803	1.54	42,512	1.62	33,029	0.90	111,843	1.49
HOGFISH	3,511	2.37	11,728	2.03	20,742	2.12	13,859	2.04	49,840	2.14
TRUNKFISH	1,662	3.45	11,054	1.35	23,739	1.82	52,269	1.89	90,743	2.13
DOLPHINFISH	15,964	2.24	2,466	2.28	47,727	1.78	71,240	1.31	137,397	1.90
SQUIRRELFISH	4,815	1.49	3,077	1.29	6,607	1.28	3,860	0.95	18,454	1.25
MULLET	22,459	1.33	2,746	1.56	21,108	1.32	6,916	0.94	53,229	1.29
JACKS	25,130	1.73	9,502	1.40	9,096	1.44	28,400	1.21	72,128	1.45
PARROT FISH	4,647	1.99	13,015	1.42	42,654	1.50	37,521	0.84	97,837	1.44
GROUPERS										
RED HIND	8,772	2.37	6,884	1.99	14,156	2.06	22,903	1.88	52,715	2.08
NASSAU GROPER	3,062	2.04	865	1.92	777	1.74	14,277	1.22	18,981	1.73
GROPER CATEGORY	9,901	2.34	6,431	2.17	8,755	1.95	19,757	1.84	44,847	2.08
MOJARRA	13,355	1.66	2,294	1.52	2,714	1.65	1,292	1.17	19,655	1.50
SNAPPERS										
LANE SNAPPER	13,039	2.43	29,229	2.04	126,372	1.95	44,540	1.87	213,180	2.07
YELLOWTAIL SNAPPER	47,563	2.38	63,027	2.08	93,799	1.95	47,938	1.73	252,327	2.04
SILK SNAPPER	44,923	2.80	11,329	2.44	51,101	2.99	171,043	2.09	278,396	2.58
MUTTON SNAPPER	9,434	2.47	12,149	2.22	37,080	1.96	19,188	1.87	77,851	2.13
OTHER SNAPPER	18,189	2.44	16,871	2.12	19,197	1.95	22,762	1.85	77,019	2.09
TRIGGERFISH	9,222	2.03	11,813	1.52	22,097	1.70	21,433	1.10	64,565	1.59
BARRACUDA	5,798	1.60	1,907	1.70	12,409	1.60	13,697	1.90	33,811	1.70
PORGY	781	2.07	11,725	1.53	10,623	1.64	3,440	1.21	26,569	1.61
SNOK	20,536	1.84	4,499	1.72	11,123	1.71	6,241	1.55	42,399	1.71
TARPON	388	1.07	0	0.00	0	0.00	113	1.06	701	0.53
GOATFISH	665	2.16	5,617	1.91	6,435	1.64	2,274	0.89	14,991	1.65
SARDINES	15,513	1.19	850	1.96	2,167	1.28	3,905	1.16	22,435	1.40
MACKERELS	28,977	1.98	36,099	2.06	65,482	1.78	49,821	1.70	180,379	1.88
SHARKS	11,950	1.86	6,141	1.58	14,600	1.66	18,614	1.25	51,305	1.59
MARGATE	123	1.78	382	1.64	1,999	1.57	171	1.14	2,675	1.53
CLASSIFIED										
FIRST CLASS	4,561	2.24	60,144	1.96	15,226	1.12	57,144	1.38	137,075	1.68
SECOND CLASS	3,247	1.21	20,653	1.08	24,875	0.70	70,773	0.84	120,548	0.96
THIRD CLASS	0	0.00	62,691	1.19	2,488	1.06	497	0.72	65,676	0.74
TRASH	0	0.00	38	1.88	18	0.50	30	0.29	86	0.66
OTHER FISHES	27,815		21,736		86,303		53,818		189,672	
TOTAL FISHES	412,574	1.89	487,857	1.46	868,885	1.53	1,096,692	1.43	2,866,008	1.58
SHELLFISH										
CONCH	2,151	3.02	71,680	2.16	46,249	2.26	140,673	2.16	260,753	2.40
LAND CRAB	1,061	2.95	1,008	2.43	2,246	1.77	289	2.32	4,604	2.37
LOBSTER	16,683	6.20	55,497	5.28	125,689	5.13	101,532	5.15	299,401	5.44
OYSTER	363	3.56	22	5.25	748	3.17	389	2.25	1,522	3.56
OCTOPUS	2,432	2.57	2,249	2.52	30,727	2.51	4,115	2.23	39,523	2.46
OTHER SHELLFISH	1,728	4.03	286	3.31	2,212	2.82	25,861	2.33	30,087	3.12
TOTAL SHELLFISH	24,418	5.19	130,747	4.33	207,871	4.09	272,859	4.35	635,890	4.50
TOTAL	436,092	2.08	618,599	1.92	1,076,756	2.08	1,369,551	1.68	3,501,898	1.94

* P/P = Average Price Per Pound

TABLE I-C. LANDINGS REPORTED BY SPECIES AND BY COAST IN PUERTO RICO DURING 1999.

SPECIES	NORTH		EAST		SOUTH		WEST		TOTAL	
	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P
FISH										
TUNA	17,094	1.67	18,556	1.59	5,747	1.38	112,860	1.00	155,257	1.41
BALLYHOO	6,997	1.22	11,159	1.39	25,160	1.20	7,487	1.17	50,803	1.25
GRUNTS	7,922	1.95	33,806	1.61	55,831	1.54	20,147	0.91	117,706	1.50
HOGFISH	1,048	2.37	15,751	2.11	19,497	2.06	10,031	2.16	46,327	2.18
TRUNKFISH	1,093	2.73	15,447	1.44	22,939	1.80	44,546	1.98	84,025	1.99
DOLPHINFISH	11,804	2.29	3,106	2.47	43,193	1.81	72,057	1.31	130,161	1.97
SQUIRRELFISH	3,107	1.43	3,784	1.38	6,806	1.35	1,019	1.66	14,716	1.31
MULLET	24,065	1.33	4,649	1.33	24,382	1.22	8,736	0.86	61,832	1.19
JACKS	26,812	1.78	15,956	1.42	17,210	1.43	18,204	1.27	78,182	1.47
PARROTFISH	3,330	2.04	12,616	1.54	47,860	1.50	16,984	0.94	80,790	1.51
GROUPERS										
RED HIND	7,281	2.40	14,551	1.94	17,792	2.08	26,441	1.94	66,063	2.09
NASSAU GROPER	3,389	1.98	1,561	2.10	1,264	1.71	8,753	1.22	14,967	1.75
GROPER CATEGORY	11,378	2.34	12,026	2.18	11,559	1.96	23,232	1.84	58,195	2.08
AJIAARRA	14,941	1.79	3,531	1.68	2,616	1.53	1,008	1.69	22,096	1.52
SNAPPERS										
LANE SNAPPER	11,534	2.44	32,298	2.09	126,799	2.00	25,695	2.03	196,326	2.14
YELLOWTAIL SNAPPER	56,070	2.46	72,498	2.21	107,338	1.99	47,167	1.85	283,073	2.13
SILK SNAPPER	45,795	2.86	13,877	2.99	25,376	2.85	140,960	2.76	226,008	2.87
MUTTON SNAPPER	8,849	2.58	12,901	2.24	49,519	2.00	25,244	2.08	96,513	2.23
OTHER SNAPPER	18,097	2.47	18,684	2.21	32,719	2.02	15,111	1.86	84,611	2.14
TRIGGERFISH	5,597	1.99	9,711	1.66	18,025	1.74	16,255	1.14	49,588	1.63
BARRACUDA	7,084	1.69	2,738	1.52	9,613	1.57	5,594	1.07	25,029	1.46
PORGY	704	2.35	13,343	1.58	17,909	1.50	3,350	1.10	34,406	1.63
SNOOK	22,020	2.00	10,487	1.80	12,309	1.59	5,114	1.42	49,930	1.70
TARPON	2,325	1.05	0	0.00	0	0.00	49	1.00	2,374	0.51
GOATFISH	382	2.24	17,914	2.09	7,064	1.69	741	1.11	26,301	1.78
SARDINES	18,220	1.23	1,326	1.19	6,277	1.37	1,700	1.17	27,523	1.24
MACKERELS	25,812	2.03	43,366	2.11	53,158	1.88	69,849	1.83	192,185	1.96
SHARKS	10,717	1.76	11,730	1.70	6,434	1.81	15,772	1.15	44,653	1.61
MARGATE	450	1.95	100	1.75	431	1.62	0	0.00	990	1.33
CLASSIFIED										
FIRST CLASS	341	1.97	44,489	2.05	13,409	1.27	45,451	1.60	103,693	1.72
SECOND CLASS	554	1.63	124	1.58	23,811	0.63	82,465	0.75	106,954	1.15
THIRD CLASS	210	1.00	32,225	1.19	366	0.86	344	0.70	33,145	0.94
TRASH	0	0.00	222	1.54	150	0.65	103	0.75	475	0.74
OTHER FISHES	25,982		15,820		65,078		63,250		170,130	
TOTAL FISHES	401,217	1.90	521,352	1.54	876,741	1.46	935,719	1.15	2,735,029	1.59
SHELLFISH										
CONCH	1,581	3.27	52,068	2.25	44,232	2.35	116,407	2.08	214,288	2.49
LAND CRAB	1,394	4.13	312	4.38	551	2.49	343	1.84	2,600	3.21
LOBSTER	14,064	6.03	73,047	5.50	133,353	5.08	107,342	5.18	327,806	5.45
OYSTER	81	4.50	85	6.50	297	2.40	827	3.09	1,290	4.12
OCTOPUS	2,348	3.09	2,524	2.52	32,773	2.64	5,842	2.28	43,487	2.63
OTHER SHELLFISH	3,960	3.31	1,068	2.92	4,000	3.24	3,958	2.46	12,986	2.98
TOTAL SHELLFISH	23,428	5.19	129,104	4.35	215,206	4.09	234,719	4.35	602,457	4.50
TOTAL	424,645	2.08	650,456	1.92	1,091,947	2.08	1,170,438	1.68	3,337,486	1.94

* P/P = Average Price Per Pound

**TABLE 2. TOTAL TRIP TICKETS COLLECTED IN PUERTO RICO
BY MONTH DURING JANUARY 1997 - March 2000.**

MONTH	1997 NUMBER OF TICKETS	1998 NUMBER OF TICKETS	1999 NUMBER OF TICKETS	2000 NUMBER OF TICKETS
JANUARY	3,813	3,223	3,140	3,147
FEBRUARY	2,961	3,174	3,125	3,069
MARCH	3,762	3,322	3,710	3,458
APRIL	3,286	3,445	3,258	
MAY	3,278	3,620	3,472	
JUNE	3,105	3,094	2,968	
JULY	3,227	3,112	3,104	
AUGUST	3,405	3,022	2,924	
SEPTEMBER	2,967	1,562	2,839	
OCTOBER	3,020	1,481	2,703	
NOVEMBER	2,911	2,005	2,199	
DECEMBER	2,735	1,779	2,103	
TOTAL	38,470	32,839	35,545	9,674

TABLE 3. LIST OF FISH AND SHELLFISH REPORTED DURING
1997-2000 IN PUERTO RICO'S LANDINGS DATA.

LIST OF FISH

FAMILY	GENUS	SPECIES
Acanthuridae	<i>Acanthurus</i>	<i>bahianus</i>
Albulidae	<i>Albula</i>	<i>vulpes</i>
Albulidae		
Antennariidae	<i>Histrio</i>	<i>histrio</i>
Apogonidae	<i>Apogon</i>	<i>maculatus</i>
Balistidae	<i>Aluterus</i>	<i>monocerus</i>
Balistidae	<i>Balistes</i>	<i>vetula</i>
Balistidae	<i>Cantherines</i>	<i>pullus</i>
Balistidae		
Belonidae	<i>Tylosurus</i>	<i>crocodilus</i>
Carangidae	<i>Alectis</i>	<i>ciliaris</i>
Carangidae	<i>Caranx</i>	<i>bartholomaei</i>
Carangidae	<i>Caranx</i>	<i>ruber</i>
Carangidae	<i>Caranx</i>	<i>crysos</i>
Carangidae	<i>Caranx</i>	<i>hippos</i>
Carangidae	<i>Caranx</i>	<i>latus</i>
Carangidae	<i>Chloroscombrus</i>	<i>chrysurus</i>
Carangidae	<i>Elagatis</i>	<i>bipinnulatus</i>
Carangidae	<i>Selar</i>	<i>crumenophtalmus</i>
Carangidae	<i>Seriola</i>	<i>rivoliana</i>
Carangidae	<i>Seriola</i>	<i>dumerili</i>
Carangidae	<i>Trachinotus</i>	<i>falcatus</i>
Carangidae	<i>Trachinotus</i>	<i>goodei</i>
Carangidae	<i>Vomer</i>	<i>setapinnis</i>
Carangidae		
Carcharhinidae	<i>Prionace</i>	<i>glauca</i>
Centrarchidae	<i>Lepomis</i>	<i>gulosus</i>
Centrarchidae	<i>Lepomis</i>	<i>macrochirus</i>
Centropomidae	<i>Centropomus</i>	<i>undecimalis</i>
Centropomidae	<i>Centropomus</i>	<i>parallelus</i>
Chaetodontidae		
Clupeidae	<i>Harengula</i>	<i>jaguana</i>
Clupeidae	<i>Opisthonema</i>	<i>oglinum</i>
Clupeidae		
Congridae	<i>Conger</i>	<i>triporiceps</i>
Coryphaenidae	<i>Coryphaena</i>	<i>hippurus</i>
Coryphaenidae		
Dasyatidae	<i>Dasyatis</i>	<i>americana</i>
Dasyatidae		
Diodontidae		
Echeniedae		
Elopidae	<i>Elops</i>	<i>saurus</i>
Elopidae	<i>Megalops</i>	<i>atlanticus</i>
Elopidae		

TABLE 3. LIST OF FISH AND SHELLFISH REPORTED DURING
1997-2000 IN PUERTO RICO'S LANDINGS DATA. Continued.

LIST OF FISH

FAMILY	GENUS	SPECIES
Engraulidae	<i>Cetengraulis</i>	<i>edentulus</i>
Ephippidae		
Exocoetidae	<i>Hemiramphus</i>	<i>brasiliensis</i>
Exocoetidae	<i>Hyporhamphus</i>	<i>unifasciatus</i>
Gerreidae	<i>Diapterus</i>	<i>plumieri</i>
Gerreidae	<i>Eucinostomus</i>	<i>gula</i>
Gerreidae	<i>Gerres</i>	<i>cinereus</i>
Gerreidae		
Gobiidae	<i>Sicydium</i>	<i>plumieri</i>
Holocentridae	<i>Holocentrus</i>	<i>ascensionis</i>
Holocentridae		
Istiophoridae	<i>Makaira</i>	<i>nigricans</i>
Istiophoridae	<i>Tetrapterus</i>	<i>albidus</i>
Kyphosidae	<i>Kyphosus</i>	<i>incisor</i>
Kyphosidae		
Labridae	<i>Bodianus</i>	<i>rufus</i>
Labridae	<i>Lachnolaimus</i>	<i>maximus</i>
Labridae		
Lamnidae		
Lobotidae	<i>Lobotes</i>	<i>surinamensis</i>
Lutjanidae	<i>Apsilus</i>	<i>dentatus</i>
Lutjanidae	<i>Etelis</i>	<i>oculatus</i>
Lutjanidae	<i>Lutjanus</i>	<i>cyanopterus</i>
Lutjanidae	<i>Lutjanus</i>	<i>griseus</i>
Lutjanidae	<i>Lutjanus</i>	<i>jocu</i>
Lutjanidae	<i>Lutjanus</i>	<i>analis</i>
Lutjanidae	<i>Lutjanus</i>	<i>synagris</i>
Lutjanidae	<i>Lutjanus</i>	<i>mahogoni</i>
Lutjanidae	<i>Lutjanus</i>	<i>buccanella</i>
Lutjanidae	<i>Lutjanus</i>	<i>vivanus</i>
Lutjanidae	<i>Ocyurus</i>	<i>chrysurus</i>
Lutjanidae	<i>Pristipomoides</i>	<i>macrophthalmus</i>
Lutjanidae	<i>Rhomboplites</i>	<i>aurorubens</i>
Lutjanidae		
Malacanthidae	<i>Caulolatilus</i>	<i>cyanops</i>
Malacanthidae	<i>Malacanthus</i>	<i>plumieri</i>
Mobulidae	<i>Manta</i>	<i>birostris</i>
Mobulidae		
Mugilidae	<i>Mugil</i>	<i>liza</i>
Mugilidae	<i>Mugil</i>	<i>curema</i>
Mugilidae		
Mullidae	<i>Joturus</i>	<i>pichardi</i>
Mullidae	<i>Mulloidichthys</i>	<i>martinicus</i>
Mullidae	<i>Pseudupeneus</i>	<i>maculatus</i>
Muraenidae	<i>Enchelycore</i>	<i>nigricans</i>
Muraenidae	<i>Gymnothorax</i>	<i>ocyllatus</i>
Myliobatidae	<i>Aetobatus</i>	<i>narinari</i>

TABLE 3. LIST OF FISH AND SHELLFISH REPORTED DURING
1999-2000 IN PUERTO RICO'S LANDINGS DATA. Continued.

LIST OF FISH

FAMILY	GENUS	SPECIES
Ogcocephalidae	<i>Ogcocephalus</i>	<i>nasutus</i>
Orectolobidae		
Ostraciidae	<i>Acanthostracion</i>	<i>polygonius</i>
Ostraciidae	<i>Acanthostracion</i>	<i>quadricornis</i>
Ostraciidae	<i>Lactophrys</i>	<i>trigonus</i>
Polynemidae	<i>Polydactylus</i>	<i>virginicus</i>
Pomacentridae		
Pomadasyidae	<i>Anisotremus</i>	<i>surinamensis</i>
Pomadasyidae	<i>Conodon</i>	<i>nobilis</i>
Pomadasyidae	<i>Haemulon</i>	<i>album</i>
Pomadasyidae	<i>Haemulon</i>	<i>plumieri</i>
Pomadasyidae	<i>Haemulon</i>	<i>sciurus</i>
Pomadasyidae	<i>Haemulon</i>	<i>chrysargyreum</i>
Pomadasyidae	<i>Haemulon</i>	<i>melanurum</i>
Pomadasyidae	<i>Pomadasys</i>	<i>crocro</i>
Priacanthidae	<i>Priacanthus</i>	<i>arenatus</i>
Priacanthidae	<i>Priacanthus</i>	<i>cruentatus</i>
Priacanthidae		
Scaridae	<i>Scarus</i>	<i>coelestinus</i>
Scaridae	<i>Sparisoma</i>	<i>viride</i>
Scaridae	<i>Sparisoma</i>	<i>chrysopterum</i>
Sciaenidae	<i>Micropogonias</i>	<i>furnieri</i>
Sciaenidae	<i>Odontoscion</i>	<i>dentex</i>
Sciaenidae	<i>Bairdiella</i>	<i>ronchus</i>
Sciaenidae		
Scombridae	<i>Acanthocybium</i>	<i>solanderi</i>
Scombridae	<i>Euthynnus</i>	<i>pelamis</i>
Scombridae	<i>Euthynnus</i>	<i>alletteratus</i>
Scombridae	<i>Scomberomorus</i>	<i>cavalla</i>
Scombridae	<i>Scomberomorus</i>	<i>regalis</i>
Scombridae	<i>Thunnus</i>	<i>albacares</i>
Scombridae	<i>Thunnus</i>	<i>atlanticus</i>
Scombridae		
Serranidae	<i>Cephalopholis</i>	<i>fulvus</i>
Serranidae	<i>Epinephelus</i>	<i>itajara</i>
Serranidae	<i>Epinephelus</i>	<i>mystacinus</i>
Serranidae	<i>Epinephelus</i>	<i>guttatus</i>
Serranidae	<i>Epinephelus</i>	<i>striatus</i>
Serranidae	<i>Mycteroperca</i>	<i>bonaci</i>
Serranidae	<i>Mycteroperca</i>	<i>venenosa</i>
Serranidae	<i>Mycteroperca</i>	<i>tigris</i>
Sparidae	<i>Archosargus</i>	<i>rhombooidalis</i>

TABLE 3. LIST OF FISH AND SHELLFISH REPORTED DURING
1997-2000 IN PUERTO RICO'S LANDINGS DATA. Continued.

LIST OF FISH

FAMILY	GENUS	SPECIES
Sparidae	<i>Calamus</i>	<i>bajonado</i>
Sphyraenidae	<i>Sphyraena</i>	<i>guachancho</i>
Sphyraenidae	<i>Sphyraena</i>	<i>picudilla</i>
Stromateidae		
Synodontidae	<i>Synodus</i>	<i>intermedius</i>
Trichiuridae		
Trichiuridae	<i>Trichiurus</i>	<i>lepturus</i>
Trichuridae	<i>Gempylus</i>	<i>serpens</i>
Trichuridae	<i>Ruvettus</i>	<i>pretiosus</i>
Xiphiidae	<i>Xiphias</i>	<i>gladius</i>

LIST OF SHELLFISH

COMMON NAME	GENUS	SPECIES
Caribbean king crab	<i>Mithrax</i>	<i>spinosissimus</i>
Coral crab	<i>Carpilius</i>	<i>corallinus</i>
Land crab	<i>Cardisoma</i>	<i>ghuanhumi</i>
Mangrove oyster	<i>Crassostrea</i>	<i>rhizophorae</i>
Octopus	<i>Octopus</i>	<i>sp</i>
Queen conch	<i>Strombus</i>	<i>gigas</i>
Spiny lobster	<i>Panulirus</i>	<i>argus</i>
Spotted spiny lobster	<i>Panulirus</i>	<i>guttatus</i>
Whelk	<i>Cittarium</i>	<i>pica</i>
	<i>Arenaeus</i>	<i>cribrarius</i>
	<i>Callinectes</i>	<i>spp</i>

TABLE 4-A. LANDINGS REPORTED BY MUNICIPALITY AND
BY COAST IN PUERTO RICO DURING 1997.

LOCATION	POUNDS	VALUE (U.S. DOLLAR)	AVERAGE PRICE PER POUND
NORTH	481,385	1,070,222	2.10
Isabela	21,012	38,934	1.44
Quebradillas	0	0	0.00
Camuy	17,453	38,952	1.93
Hatillo	13,809	27,217	1.59
Arecibo	47,090	114,579	2.44
Barceloneta	35,990	69,362	1.80
Manati	11,853	24,013	2.04
Vega Baja	19,878	57,702	2.72
Vega Alta	19,520	44,753	2.22
Dorado	21,429	50,727	2.07
Toa Baja	3,576	5,501	1.47
Cataño	62,690	140,536	2.31
San Juan	84,096	201,250	2.35
Carolina	21,085	34,918	1.57
Loíza	58,210	109,410	1.72
Río Grande	19,030	60,522	2.78
Luquillo	24,664	51,846	2.05
EAST	729,644	1,558,601	1.95
Fajardo	157,645	343,180	1.85
Ceiba	67,033	150,137	2.09
Naguabo	81,781	191,914	2.14
Humacao	104,665	213,533	1.99
Yabucoa	35,767	71,845	2.01
Maunabo	44,896	148,269	1.59
Culebra	29,562	62,127	2.04
Vieques	208,295	377,596	1.87
SOUTH	1,226,665	2,600,272	1.86
Patillas	63,559	170,013	2.51
Arroyo	57,205	106,936	1.74
Guayama	163,425	372,078	1.89
Salinas	180,194	403,803	1.99
Santa Isabel	72,763	155,521	1.97
Juana Diaz	226,120	500,206	1.71
Ponce	85,245	183,134	2.01
Peñuelas	49,056	146,808	2.37
Guayanilla	34,850	51,291	1.29
Guánica	116,112	213,663	1.70
Lajas	178,136	296,819	1.59
WEST	1,458,286	2,665,805	1.58
Cabo Rojo	806,016	1,460,320	1.80
Mayaguez	122,059	221,129	1.69
Añasco	36,373	84,937	1.73
Rincón	72,532	178,586	1.63
Aguada	114,280	169,409	1.22
Aguadilla	307,026	551,424	1.18
TOTAL	3,895,980	7,894,900	1.83

TABLE 4-B. LANDINGS REPORTED BY MUNICIPALITY AND BY COAST IN PUERTO RICO DURING 1998.

LOCATION	POUNDS	VALUE (U.S. DOLLAR)	AVERAGE PRICE PER POUND
NORTH	436,992	970,833	2.09
Isabela	13,669	29,315	1.52
Quebradillas	0	0	0.00
Camuy	22,915	46,796	1.64
Hatillo	4,580	9,634	1.35
Arecibo	40,977	105,115	2.05
Barceloneta	37,565	75,010	2.22
Manati	18,378	38,401	2.33
Vega Baja	35,888	100,355	2.89
Vega Alta	15,371	35,949	2.12
Dorado	14,163	34,883	2.03
Toa Baja	1,195	1,947	1.42
Cataño	42,196	94,104	2.11
San Juan	81,663	189,836	2.25
Carolina	27,846	50,051	1.77
Loíza	43,113	81,697	1.52
Rio Grande	16,491	40,955	2.31
Luquillo	20,982	36,785	1.94
EAST	618,599	1,294,748	1.87
Fajardo	132,713	290,272	1.75
Ceiba	69,637	140,913	1.76
Naguabo	88,893	199,955	1.97
Humacao	64,034	150,680	2.13
Yabucoa	12,686	25,640	1.88
Maunabo	33,984	53,478	1.66
Culebra	4,846	8,287	1.71
Vieques	211,806	425,523	1.94
SOUTH	1,076,756	2,351,361	1.99
Patillas	38,912	99,667	2.52
Arroyo	42,356	85,197	1.82
Guayama	151,902	352,406	2.04
Salinas	91,171	240,307	2.12
Santa Isabel	52,652	135,512	2.29
Juana Diaz	168,018	353,552	1.83
Ponce	112,733	228,507	1.96
Peñuelas	53,540	163,190	2.29
Guayanilla	22,597	32,198	1.41
Guánica	127,947	260,934	2.01
Lajas	214,928	399,891	1.80
WEST	1,369,551	2,661,593	1.77
Cabo Rojo	767,782	1,580,034	2.02
Mayaguez	105,094	196,681	1.78
Añasco	70,402	219,128	2.46
Rincón	88,793	210,565	1.82
Aguada	97,475	152,028	1.50
Aguadilla	240,005	303,157	1.23
TOTAL	3,501,898	7,278,535	1.92

TABLE 4-C. LANDINGS REPORTED BY MUNICIPALITY AND BY COAST IN PUERTO RICO DURING 1999.

LOCATION	POUNDS	VALUE (U.S. DOLLAR)	AVERAGE PRICE PER POUND
NORTH	424,645	966,074	2.04
Isabela	12,963	22,595	1.17
Quebradillas	0	0	0.00
Camuy	5,942	12,250	1.72
Hatillo	5,164	12,691	1.94
Arecibo	56,797	165,310	2.12
Barceloneta	19,198	39,606	2.13
Manati	14,127	26,777	1.91
Vega Baja	28,430	67,492	2.15
Vega Alta	9,071	20,725	2.16
Dorado	15,824	43,220	2.73
Toa Baja	2,819	3,957	1.41
Cataño	46,165	102,268	2.23
San Juan	100,007	233,735	2.14
Carolina	32,879	65,160	1.59
Loíza	28,749	44,812	1.67
Rio Grande	32,663	77,334	1.99
Luquillo	13,847	28,142	1.76
EAST	650,456	1,488,595	1.87
Fajardo	149,798	343,445	1.91
Ceiba	58,172	122,563	1.78
Naguabo	159,194	408,088	2.09
Humacao	99,877	248,644	2.37
Yabucoa	30,269	69,557	2.12
Maunabo	67,817	94,663	1.64
Culebra	29,041	67,527	2.02
Vieques	56,288	134,108	1.97
SOUTH	1,091,947	2,432,921	1.99
Patillas	32,916	93,572	2.50
Arroyo	43,897	86,841	1.74
Guayama	140,330	370,335	2.01
Salinas	79,708	204,494	2.13
Santa Isabel	53,811	142,762	2.33
Juana Diaz	135,330	330,779	1.98
Ponce	94,360	193,182	1.93
Peñuelas	53,647	163,111	2.12
Guayanilla	54,997	71,617	1.07
Guánica	157,547	318,539	1.76
Lajas	245,404	457,689	1.75
WEST	1,170,438	2,367,834	1.77
Cabo Rojo	632,607	1,357,612	2.16
Mayaguez	106,937	211,334	1.85
Añasco	34,529	93,809	2.25
Rincón	106,260	297,592	2.09
Aguada	79,748	125,124	1.38
Aguadilla	210,357	282,363	1.31
TOTAL	3,337,486	7,255,424	1.92

TABLE S-A. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1997.

SPECIES	BEACH SEINE (POUNDS)	FISH TRAP (POUNDS)	LOBSTER TRAP (POUNDS)	GILL NET (POUNDS)	BOTTOM LINE (POUNDS)	TROLL LINE (POUNDS)	LONG LINE (POUNDS)	LAND CRAB TRAP (POUNDS)	CAST NET (POUNDS)
FISH									
TUNA	30,998	0	0	4,193	30,726	150,253	158	0	5
BALLYHOO	8,410	135	0	47,840	0	0	153	0	392
GRUNTS	3,785	57,738	0	39,957	21,495	90	517	0	433
HOGFISH	182	10,573	15	4,151	3,688	19	68	0	0
TRUNKFISH	932	48,254	1,118	5,486	4,543	0	422	0	452
DOLPHINFISH	0	0	0	1,805	32,472	127,141	35	0	0
SQUIRRELFISH	181	9,157	0	3,430	6,759	0	211	0	128
MULLET	3,338	591	0	44,958	4,665	49	18	0	1,353
JACKS	18,793	3,375	0	18,935	34,411	2,593	701	0	147
PARROTISH	1,489	21,809	24	25,982	3,504	0	137	0	135
GROUPERS									
RED HIND	154	14,229	0	1,505	30,432	5	1,125	0	15
NASSAU GROPER	11	2,463	0	201	11,017	19	50	0	33
GROPER CATEGORY	120	11,634	0	1,793	50,936	0	1,057	0	36
MOJARRA	2,008	517	0	16,072	2,704	10	37	0	1,282
SNAPPERS									
LANE SNAPPER	2,323	107,443	349	47,581	81,305	1,482	25,369	0	728
YELLOWTAIL SNAPPER	4,297	26,405	0	16,373	209,272	4,998	3,592	0	52
SILK SNAPPER	0	47,150	0	0	238,757	0	0	0	0
MUTTON SNAPPER	1,707	17,894	98	9,640	35,583	2,831	2,529	0	13
OTHER SNAPPER	2,129	13,834	78	800	46,108	1,974	1,580	0	45
TRIGGERFISH	212	37,292	65	1,923	18,106	171	46	0	103
BARRACUDA	8,553	0	0	8,700	1,594	7,729	26	0	257
PORGY	1,003	11,449	0	9,260	3,560	193	165	0	29
SNOOK	9,527	333	0	34,914	6,004	680	119	0	282
TARPON	80	0	0	1,110	153	0	0	0	0
GOATFISH	118	11,893	0	2,126	2,111	0	16	0	40
SARDINES	3,561	217	0	4,952	0	0	0	0	23,690
MACKERELS	9,473	1,027	0	39,208	102,865	52,680	317	0	324
SHARKS	473	0	0	8,488	27,938	1,722	12,115	0	73
MARGATE	0	1,236	0	1,155	654	0	0	0	20
CLASSIFIED									
FIRST CLASS	889	86,580	0	6,744	17,244	157	158	0	0
SECOND CLASS	602	49,470	9,796	1,912	177	159	165	0	70
THIRD CLASS	295	93,197	6	947	15,897	12	226	0	466
TRASH	0	1,550	0	10	456	0	0	0	0
OTHER FISHES	20,097	57,091	0	56,263	77,394	0	14,472	0	0
TOTAL FISHES	135,740	744,636	11,549	458,414	1,122,530	354,967	65,581	0	30,603
SELLFISH									
CONCH	0	0	0	0	0	0	0	0	0
LAND CRAB	0	0	0	0	0	0	0	10,066	0
LOBSTER	178	111,614	41,460	1,405	0	0	0	0	507
OYSTER	0	0	0	0	0	0	0	0	0
OCTOPUS	0	1,544	581	141	0	0	0	0	0
OTHER SHELLFISH	208	866	4	252	0	0	0	0	1,954
TOTAL SHELLFISH	386	114,024	42,045	1,798	0	0	0	10,066	2,461
TOTAL	136,126	858,660	53,594	460,212	1,122,530	354,967	65,581	10,066	33,064

TABLE 5-A. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1997. Continued.

SPECIES	ROD AND LINE (POUNDS)	SKIN DIVING (POUNDS)	BY HAND (POUNDS)	SCUBA DIVING (POUNDS)	TRAMMEL NET (POUNDS)	TOTAL (POUNDS)
FISH						
TUNA	175	0	0	0	60	216,568
BALLYHOO	0	0	0	0	1,506	58,436
GRUNTS	0	12	0	2,308	37,817	164,152
HOGFISH	0	348	0	25,910	24,133	69,087
TRUNKFISH	9	130	0	7,421	13,463	82,230
DOLPHINFISH	5,023	0	0	0	411	166,887
SQUIRRELFISH	0	163	0	10	1,593	21,632
MULLET	0	32	0	45	534	55,583
JACKS	0	249	0	863	2,369	82,436
PARROTISH	0	776	0	16,347	41,061	111,264
GROUPERS						
RED HIND	0	143	0	11,757	858	60,223
NASSAU GROUPER	0	66	0	1,579	74	15,513
GROPER CATEGORY	0	197	0	13,372	56	79,201
MOJARRA	0	90	0	47	1,001	23,768
SNAPPERS						
LANE SNAPPER	0	117	0	1,489	2,275	270,461
YELLOWTAIL SNAPPER	0	104	0	183	8,547	273,823
SILK SNAPPER	0	0	0	0	0	285,907
MUTTON SNAPPER	0	293	0	3,144	2,851	76,583
OTHER SNAPPER	0	352	0	7,541	8,359	82,800
TRIGGERFISH	0	57	0	10,827	4,385	73,187
BARRACUDA	0	126	0	485	377	27,847
PORGY	0	0	0	281	2,523	28,463
SNOK	0	203	0	429	405	52,896
TARPON	0	0	0	0	89	1,432
GOATFISH	0	0	0	0	2,508	18,812
SARDINES	0	0	0	0	54	32,474
MACKERELS	0	1,660	0	399	5,934	203,887
SHARKS	0	607	0	1,851	8,001	61,268
MARGATE	0	0	0	0	545	3,610
CLASSIFIED						
FIRST CLASS	0	115	0	14,939	14,865	141,691
SECOND CLASS	42	504	0	39,151	0	102,048
THIRD CLASS	0	0	0	0	10,935	122,081
TRASH	0	0	0	0	0	2,016
OTHER FISHES	145	505	0	22,013	0	247,980
TOTAL FISHES	5,394	6,849	0	182,391	197,589	3,316,246
SHELLFISH						
CONCH	0	4,501	0	234,386	0	238,887
LAND CRAB	0	0	0	0	0	10,066
LOBSTER	0	2,418	0	109,337	17,303	284,222
OYSTER	0	0	608	0	0	608
OCTOPUS	0	22,901	0	13,444	129	38,740
OTHER SHELLFISH	0	252	0	3,675	0	7,211
TOTAL SHELLFISH	0	30,072	608	360,842	17,432	579,734
TOTAL	5,394	36,921	608	543,233	215,021	3,895,980

TABLE 5-B. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1998.

SPECIES	BEACH SEINE (POUNDS)	FISH TRAP (POUNDS)	LOBSTER TRAP (POUNDS)	GILL NET (POUNDS)	BOTTOM LINE (POUNDS)	TROLL LINE (POUNDS)	LONG LINE (POUNDS)	LAND CRAB TRAP (POUNDS)	CAST NET (POUNDS)
FISH									
TUNA	16,103	2,405	0	4,392	39,203	138,226	0	0	0
BALLYHOO	1,160	1,479	0	40,103	2,015	457	100	0	266
GRUNTS	1,539	44,625	0	25,131	14,332	515	517	0	35
HOGFISH	26	11,348	0	3,525	2,604	230	0	0	185
TRUNKFISH	195	59,676	3,010	6,172	2,997	0	0	0	309
DOLPHINFISH	0	0	0	3,310	35,359	97,903	0	0	0
SQUIRRELISH	20	8,867	0	2,497	5,447	324	0	0	25
MULLET	857	2,128	0	46,142	2,335	99	0	0	783
JACKS	8,508	3,702	0	18,109	35,945	2,397	0	0	617
PARROTISH	253	24,609	0	15,695	4,570	50	35	0	95
GROUPERS									
RED HIND	16	16,942	0	960	22,175	236	0	0	744
NASSAU GROUPER	0	3,561	18	210	14,158	112	0	0	84
GROUPER CATEGORY	5	7,646	0	1,646	26,662	262	0	0	1,447
MOJARRA	1,662	1,030	0	14,849	1,229	45	0	0	48
SNAPPERS									
LANE SNAPPER	3,044	80,117	122	32,359	61,025	1,335	0	0	29,101
YELLOWTAIL SNAPPER	2,773	20,017	35	9,574	210,318	3,438	115	0	226
SILK SNAPPER	0	74,737	0	0	195,402	0	8,257	0	0
MUTTON SNAPPER	1,310	18,655	214	7,668	39,383	1,208	1,554	0	218
OTHER SNAPPER	1,168	15,065	0	9,523	39,672	1,758	1,497	0	100
TRIGGERFISH	99	28,758	0	2,180	14,651	263	0	0	197
BARRACUDA	5,196	798	0	9,411	13,530	2,794	0	0	276
POROY	167	11,097	0	9,490	4,038	66	218	0	58
SNOOK	5,098	543	0	31,714	3,122	595	88	0	305
TARPON	15	46	0	354	286	0	0	0	0
GOATFISH	18	11,899	0	1,103	1,019	0	0	0	136
SARDINES	497	469	0	3,316	2,165	258	0	0	15,511
MACKERELS	3,819	2,443	0	24,027	82,626	64,529	516	0	677
SHARKS	774	0	0	8,269	25,121	1,394	8,167	0	0
MARGATE	0	1,562	0	489	199	100	0	0	25
CLASSIFIED									
FIRST CLASS	0	43,969	0	6,363	25,380	70	0	0	0
SECOND CLASS	997	46,983	0	10,564	5,716	12	0	0	13
THIRD CLASS	0	32,493	4	1,972	3,739	0	0	0	0
TRASH	0	55	0	0	28	0	0	0	0
OTHER FISHES	10,543	34,319	0	53,423	4,369	11,120	33,954	0	0
TOTAL FISHES	65,862	611,943	3,403	404,540	940,820	329,796	55,018	0	51,481
SHELLFISH									
CONCH	96	0	0	0	0	0	0	0	0
LAND CRAB	0	0	0	0	0	0	0	4,604	0
LOBSTER	2,053	100,174	37,721	14,071	0	0	0	0	371
OYSTER	0	0	0	0	0	0	0	0	0
OCTOPUS	94	2,476	272	184	0	0	0	0	0
OTHER SHELLFISH	1,657	11,449	940	1,981	0	0	0	0	364
TOTAL SHELLFISH	3,900	114,099	38,933	16,236	0	0	0	4,604	735
TOTAL	69,762	726,042	42,336	420,776	940,820	329,796	55,018	4,604	52,216

TABLE 5-B. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1998. Continued.

SPECIES	ROD AND LINE (POUNDS)	SKIN DIVING (POUNDS)	BY HAND (POUNDS)	SCUBA DIVING (POUNDS)	TRAMMEL NET (POUNDS)	TOTAL (POUNDS)
FISH						
TUNA	0	0	0	0	0	200,329
BALLYHOO	0	0	0	0	769	46,349
GRUNTS	0	119	0	1,464	23,566	111,843
HOGFISH	0	427	0	29,298	2,197	49,840
TRUNKFISH	0	99	0	8,429	9,857	90,744
DOLPHINFISH	459	0	0	0	366	137,397
SQUIRRELFISH	0	17	0	99	1,158	18,454
MULLET	25	15	0	20	825	53,229
JACKS	517	43	0	951	1,339	72,128
PARROTISH	0	809	0	14,737	36,984	97,837
GROUPERS						
RED HIND	60	30	0	10,736	816	52,715
NASSAU GROPER	66	10	0	753	9	18,981
GROPER CATEGORY	38	235	0	6,665	241	44,847
MUJARRA	0	0	0	0	792	19,655
SNAPPERS						
LANE SNAPPER	0	75	0	2,002	4,000	213,180
YELLOWTAIL SNAPPER	111	555	0	1,415	3,750	252,327
SILK SNAPPER	0	0	0	0	0	278,396
MUTTON SNAPPER	8	388	0	4,661	2,584	77,851
OTHER SNAPPER	0	344	0	4,331	3,561	77,019
TRIGGERFISH	0	22	0	15,458	2,937	64,565
BARRACUDA	0	39	0	675	1,092	33,811
PORGY	0	12	0	450	973	26,569
SNOK	130	42	0	617	145	42,399
TARPON	0	0	0	0	0	701
GOATFISH	0	0	0	0	816	14,991
SARDINES	0	0	0	0	219	22,435
MACKERELS	18	519	0	819	386	180,379
SHARKS	0	0	0	1,035	6,545	51,305
MARGATE	0	27	0	73	200	2,675
CLASSIFIED						
FIRST CLASS	0	23	0	28,796	32,474	137,075
SECOND CLASS	0	26	0	429	55,808	120,548
THIRD CLASS	0	40	0	27,428	0	65,676
TRASH	0	0	0	3	0	86
OTHER FISHES	0	0	0	24,775	17,269	189,672
TOTAL FISHES	1,432	3,916	0	186,119	211,678	2,866,008
SHELLFISH						
CONCH	0	9,099	0	251,361	197	260,753
LAND CRAB	0	0	0	0	0	4,604
LOBSTER	0	3,193	0	127,165	14,653	299,401
OYSTER	0	0	1,522	0	0	1,522
OCTOPUS	0	19,567		16,681	249	39,523
OTHER SHELLFISH	0	661	0	10,916	2,119	30,087
TOTAL SHELLFISH	0	32,520	1,522	406,123	17,218	635,890
TOTAL	1,432	36,436	1,522	592,242	228,896	3,501,898

TABLE S-C. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1999.

SPECIES	BEACH SEINE (POUNDS)	FISH TRAP (POUNDS)	LOBSTER TRAP (POUNDS)	GILL NET (POUNDS)	BOTTOM LINE (POUNDS)	TROLL LINE (POUNDS)	LONG LINE (POUNDS)	LAND CRAB TRAP (POUNDS)	CAST NET (POUNDS)
FISH									
TUNA	7,556	0	0	6,600	25,237	105,358	0	0	0
BALLYHOO	236	189	100	47,436	1,524	520	10	0	615
GRUNTS	3,611	50,089	15	34,184	14,547	314	790	0	5
HOGFISH	0	10,765	0	1,883	2,152	121	30	0	0
TRUNKFISH	95	56,494	653	4,879	3,464	0	0	0	196
DOLPHINFISH	0	0	0	3,140	14,859	111,225	0	0	0
SQUIRRELFISH	39	7,025	0	1,942	5,272	108	107	0	25
MULLET	2,176	1,578	0	53,668	1,629	140	197	0	2,129
JACKS	8,597	2,926	0	30,169	31,758	2,543	0	0	932
PARROTISH	110	20,272	46	19,018	3,841	230	71	0	324
GROUPERS									
RED HIND	30	12,763	0	1,352	30,731	566	0	0	337
NASSAU GROPER	14	4,339	0	9,236	935	0	0	0	63
GROPER CATEGORY	62	10,576	0	2,914	30,951	259	808	0	108
MOJARRA	937	1,248	0	16,954	1,460	35	20	0	1,187
SNAPPERS									
LANE SNAPPER	3,133	71,536	216	31,285	51,922	643	34,060	0	1,509
YELLOWTAIL SNAPPER	4,117	22,804	5	14,170	229,589	3,264	6,827	0	127
SILK SNAPPER	0	52,025	0	0	171,054	0	2,929	0	0
MUTTON SNAPPER	1,212	22,676	30	10,988	52,544	827	2,029	0	106
OTHER SNAPPER	2,075	12,452	0	12,388	37,491	1,435	745	0	10
TRIGGERFISH	101	24,097	15	1,383	10,312	125	13	0	43
BARRACUDA	5,422	669	0	5,573	8,579	4,453	31	0	77
PORGY	1,244	12,870	0	13,781	4,916	398	72	0	0
SNOOK	5,311	600	30	38,226	3,449	1,222	41	0	192
TARPON	0	0	0	1,835	463	0	0	0	0
GOATFISH	0	11,873	0	11,050	3,035	86	12	0	75
SARDINES	789	196	0	2,590	1,627	109	300	0	21,912
MACKERELS	3,500	2,229	19	28,128	87,401	67,835	122	0	1,043
SHARKS	596	591	0	6,314	27,417	1,014	4,236	0	22
MARGATE	0	50	0	506	46	0	0	0	0
CLASSIFIED									
FIRST CLASS	1,703	34,298	54	5,924	15,081	292	0	0	0
SECOND CLASS	1,800	34,782	0	9,181	1,051	0	0	0	0
THIRD CLASS	117	21,293	0	210	4,595	29	0	0	0
TRASH	0	295	0	150	30	0	0	0	0
OTHER FISHES	7,865	36,906	148	16,372	69,122	5,039	12,681	0	706
TOTAL FISHES	62,448	540,506	1,331	443,429	948,084	308,190	66,131	0	31,743
SHELLFISH									
CONCH	2,791	2,944	0	1,152	0	0	0	0	0
LAND CRAB	0	0	0	0	0	0	0	2,600	0
LOBSTER	456	142,876	30,299	2,767	0	0	0	0	191
OYSTER	0	0	0	0	0	0	0	0	0
OCTOPUS	60	2,905	454	558	0	0	0	0	0
OTHER SHELLFISH	3,210	2,463	19	2,446	0	0	0	0	364
TOTAL SHELLFISH	6,517	151,188	30,772	6,923	0	0	0	2,600	555
TOTAL	68,965	691,694	32,103	450,352	948,084	308,190	66,131	2,600	32,298

TABLE S-C. LANDINGS REPORTED BY SPECIES AND BY GEAR IN PUERTO RICO DURING 1999. Continued.

SPECIES	ROD AND LINE (POUNDS)	SKIN DIVING (POUNDS)	BY HAND (POUNDS)	SCUBA DIVING (POUNDS)	TRAMMEL NET (POUNDS)	TOTAL (POUNDS)
FISH						
TUNA	0	0	0	0	10,506	155,257
BALLYHOO	0	0	0	0	173	50,803
GRUNTS	0	949	0	0	13,202	117,706
HOGFISH	0	437	0	30,341	598	46,127
TRUNKFISH	0	159	0	8,632	9,453	84,025
DOLPHINFISH	269	0	0	0	668	130,161
SQUIRRELFISH	0	31	0	0	167	14,716
MULLET	0	8	0	0	307	61,832
JACKS	0	308	0	628	321	78,182
PARROTISH	0	202	0	17,445	19,231	80,190
GROUPERS						
RED HIND	18	12	0	19,954	302	66,065
NASSAU GROPER	346	0	0	34	0	14,967
GROPER CATEGORY	0	30	0	12,460	27	58,195
MOJARRA	0	22	0	0	233	22,996
SNAPPERS						
LANE SNAPPER	10	47	0	914	1,051	196,326
YELLOWTAIL SNAPPER	147	0	0	2,023	0	283,073
SILK SNAPPER	0	0	0	0	0	226,008
MUTTON SNAPPER	13	116	0	5,025	947	96,513
OTHER SNAPPER	5	155	0	14,481	3,374	84,611
TRIGGERFISH	0	46	0	12,313	1,140	49,588
BARRACUDA	0	6	0	15	204	25,029
PORGY	0	0	0	209	916	34,406
SNOOK	64	80	0	115	600	49,930
TARPON	0	76	0	0	0	2,174
GOATFISH	0	0	0	0	170	26,101
SARDINES	0	0	0	0	0	27,523
MACKERELS	1,212	12	0	573	111	192,185
SHARKS	10	16	0	1,343	3,094	44,653
MARGATE	0	8	0	322	58	990
CLASSIFIED						
FIRST CLASS	0	12	0	22,811	23,518	103,693
SECOND CLASS	0	307	0	429	59,404	106,954
THIRD CLASS	0	0	0	0	6,901	33,145
TRASH	0	0	0	0	0	175
OTHER FISHES	0	0	0	21,291	0	170,130
TOTAL FISHES	2,094	3,039	0	171,358	156,676	2,735,029
			0			
SHELLFISH						
CONCH	0	5,594	0	201,807	0	214,388
LAND CRAB	0	0	0	0	0	2,600
LOBSTER	0	9,495	0	118,469	23,253	327,806
OYSTER	0	0	1,290	0	0	1,390
OCTOPUS	0	20,776		18,565	169	43,187
OTHER SHELLFISH	0	956	0	3,383	145	12,986
TOTAL SHELLFISH	0	36,821	1,290	342,224	23,567	602,157
TOTAL	2,094	39,860	1,290	513,582	180,243	3,337,186

TABLE 6-A. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1997.

SPECIES	JANUARY (POUNDS)	FEBRUARY (POUNDS)	MARCH (POUNDS)	APRIL (POUNDS)	MAY (POUNDS)	JUNE (POUNDS)
FISH						
TUNA	9,483	10,029	16,016	14,049	19,170	23,252
BALLYHOO	7,716	3,533	4,296	4,028	3,487	4,104
GRUNTS	15,613	16,333	21,188	14,421	12,595	11,674
HOGFISH	6,748	6,791	10,526	5,459	2,692	3,971
TRUNKFISH	7,698	9,972	8,157	6,914	6,721	7,496
DOLPHINFISH	28,810	13,904	15,015	30,621	20,306	3,072
SQUIRRELISH	1,539	1,331	1,803	1,712	2,326	1,605
MULLET	4,638	4,327	4,968	4,244	5,326	5,428
JACK	8,246	4,745	6,950	7,798	7,739	7,194
PARROTISH	9,278	8,497	11,889	8,764	6,279	7,678
GROUPERS						
RED HIND	11,804	5,172	4,245	3,670	3,431	3,441
NASSAU GROUPER	1,484	677	661	1,084	409	857
GROPER CATEGORY	8,307	6,412	9,438	9,554	4,539	6,171
MOJARRA	2,405	2,485	1,794	1,206	1,988	1,922
SNAPPERS						
LANE SNAPPER	26,290	21,202	26,494	31,833	25,104	19,949
YELLOWTAIL SNAPPER	27,043	16,161	23,340	28,379	20,951	21,844
SILK SNAPPER	25,658	17,684	24,991	36,472	16,586	23,639
MUTTON SNAPPER	5,371	5,409	11,267	9,725	8,824	4,934
OTHER SNAPPER	6,155	6,729	8,176	7,900	7,895	5,751
TRIGGERFISH	5,914	4,784	4,928	5,093	4,879	5,081
BARRACUDA	2,582	1,504	2,449	2,411	2,700	3,229
PORGY	2,536	2,289	2,780	2,388	2,219	2,769
SNOOK	4,749	4,705	4,232	3,838	4,889	4,364
TARPON	0	100	115	215	235	29
GOATFISH	2,397	1,351	1,248	1,465	1,244	1,229
SARDINES	3,382	2,241	2,839	1,628	2,745	3,158
MACKERELS	15,886	9,942	12,175	13,766	25,072	27,316
SHARKS	5,953	3,541	3,537	4,553	3,116	5,183
MARGATE	515	624	153	405	381	247
CLASSIFIED						
FIRST CLASS	12,526	12,404	11,747	13,575	12,665	10,710
SECOND CLASS	8,352	8,166	10,933	11,569	7,169	7,755
THIRD CLASS	16,328	11,563	11,030	10,192	9,042	9,863
TRASH	182	328	178	75	71	43
OTHER FISHES	12,358	8,037	17,397	36,954	25,061	19,297
TOTAL FISHES	307,946	232,972	296,955	335,960	277,856	264,255
SHELLFISH						
CONCH	23,105	22,022	26,138	22,769	23,735	21,419
LAND CRAB	1,250	903	1,004	1,140	1,270	1,354
LOBSTER	26,212	22,350	24,555	21,071	19,977	20,062
OYSTER	303	100	17	7	90	37
OCTOPUS	9,517	2,117	2,276	906	1,177	1,194
OTHER SHELLFISH	675	741	361	1,788	578	585
TOTAL SHELLFISH	61,062	48,233	54,351	47,681	46,827	44,651
TOTAL	369,008	281,205	351,306	383,641	324,683	308,906

TABLE 6-A. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1997. Continued.

SPECIES	JULY (POUNDS)	AUGUST (POUNDS)	SEPTEMBER (POUNDS)	OCTOBER (POUNDS)	NOVEMBER (POUNDS)	DECEMBER (POUNDS)	TOTAL (POUNDS)
FISH							
TUNA	21,575	34,191	25,249	19,429	12,216	11,909	216,568
BALLYHOO	3,533	4,290	5,246	6,209	6,493	5,501	58,436
GRUNTS	14,104	13,220	11,112	11,463	11,376	11,053	164,152
HOGFISH	5,622	6,541	4,959	6,427	5,051	4,300	69,087
TRUNKFISH	6,708	6,268	5,572	5,810	5,810	5,104	82,230
DOLPHINFISH	2,264	3,125	4,798	16,634	15,578	12,760	166,887
SQUIRRELFISH	1,851	1,936	1,808	2,031	1,911	1,779	21,632
MULLET	5,214	5,674	4,381	4,508	3,724	3,151	55,583
JACKS	6,932	7,293	5,657	7,135	7,739	5,006	82,436
PARROTISH	9,904	10,029	7,577	7,715	9,053	14,601	111,264
GROUPERS							
RED HIND	3,137	6,006	5,000	5,456	4,082	4,779	60,225
NASSAU GROPER	1,340	1,758	1,739	1,589	1,740	2,175	15,513
OTHER GROUPERS	3,976	4,997	6,671	8,041	5,475	5,620	79,201
MOJARRA	2,728	2,496	1,548	1,930	1,789	1,477	23,768
SNAPPERS							
LANE SNAPPER	19,447	23,343	19,068	19,464	19,372	18,895	270,461
YELLOWTAIL SNAPPER	22,609	25,195	23,678	26,093	19,195	19,335	273,823
SILK SNAPPER	17,464	17,942	18,857	47,373	17,388	21,853	285,907
MUTTON SNAPPER	5,338	5,527	5,393	5,210	4,959	4,626	76,583
OTHER SNAPPER	6,410	6,851	8,331	7,077	5,610	5,915	82,800
TRIGGERFISH	7,424	6,438	6,369	11,602	5,022	5,653	73,187
BARRACUDA	2,687	2,121	1,670	2,321	2,653	1,520	27,847
PORGY	2,536	2,343	1,887	2,051	2,384	2,281	28,463
SNOOK	5,704	6,537	3,660	4,488	3,319	2,411	52,896
TARPON	119	127	195	117	19	161	1,432
GOATFISH	1,596	1,959	1,568	2,102	1,343	1,310	18,812
SARDINES	2,482	2,895	2,682	3,139	2,328	2,955	32,474
MACKERELS	27,713	23,398	10,850	10,683	15,300	11,786	203,887
SHARKS	4,548	4,584	4,297	6,084	5,223	10,649	61,268
MARGATE	270	395	113	91	141	275	3,610
CLASSIFIED							
FIRST CLASS	10,776	11,481	14,795	13,485	9,002	8,525	141,691
SECOND CLASS	5,634	6,177	18,484	4,309	4,910	8,590	102,048
THIRD CLASS	8,831	8,144	9,905	10,040	9,288	7,855	122,081
TRASH	48	691	3	314	27	56	2,016
OTHER FISHES	16,418	26,817	11,808	26,287	23,402	24,144	247,980
TOTAL FISHES	256,942	290,791	254,930	306,707	242,922	248,010	3,316,246
SHELLFISH							
CONCH	21,588	8,670	9,575	22,830	20,915	16,121	238,887
LAND CRAB	809	440	473	694	356	373	10,066
LOBSTER	21,589	24,139	23,397	29,193	24,838	26,839	284,222
OYSTER	0	0	0	27	17	10	608
OCTOPUS	1,764	5,734	3,729	3,113	3,900	3,313	38,740
OTHER SHELLFISH	178	54	444	265	594	948	7,211
TOTAL SHELLFISH	45,928	39,037	37,618	56,122	50,620	47,604	579,734
TOTAL	302,870	329,828	292,548	362,829	293,542	295,614	3,895,980

TABLE 6-B. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1998.

SPECIES	JANUARY (POUNDS)	FEBRUARY (POUNDS)	MARCH (POUNDS)	APRIL (POUNDS)	MAY (POUNDS)	JUNE (POUNDS)
FISH						
TUNA	19,720	16,961	24,671	19,837	28,031	11,411
BALLYHOO	5,487	6,603	3,700	3,446	3,129	2,727
GRUNTS	15,305	14,607	13,485	11,024	9,662	8,552
HOGFISH	6,244	4,990	4,758	4,210	4,852	5,682
TRUNKFISH	13,835	10,159	8,965	8,517	8,524	7,967
DOLPHINFISH	23,126	17,003	16,370	17,447	12,968	4,662
SQUIRRELISH	1,860	1,675	1,930	2,034	1,879	1,518
MULLET	4,206	5,787	5,384	4,904	4,913	5,243
JACK	6,317	5,264	6,081	7,229	7,148	6,577
PARROTISH	13,375	12,164	14,122	8,549	7,603	7,570
GROUPERS						
RED HIND	9,250	5,250	4,333	4,708	3,847	4,174
NASSAU GROPER	951	1,264	1,815	1,493	1,324	1,655
GROPER CATEGORY	5,084	5,156	5,051	3,421	4,638	4,048
MOJARRA	2,035	2,710	2,074	1,909	2,036	1,726
SNAPPERS						
LANE SNAPPER	22,181	20,632	29,034	21,814	18,135	14,858
YELLOWTAIL SNAPPER	24,334	26,140	31,705	36,255	22,257	17,185
SILK SNAPPER	34,087	23,899	32,442	31,104	26,520	21,999
MUTTON SNAPPER	6,835	6,316	11,081	11,755	8,295	7,011
OTHER SNAPPER	6,443	7,757	8,445	8,804	8,888	6,784
TRIGGERFISH	6,846	5,894	5,932	7,197	6,838	7,005
BARRACUDA	2,282	2,213	3,647	3,824	3,017	1,900
PORGY	3,308	2,752	3,018	3,201	3,101	2,430
SNOOK	4,650	3,511	3,041	3,893	3,965	3,181
TARPON	119	0	19	0	58	44
GOATFISH	1,601	1,978	1,062	1,277	1,276	1,382
SARDINES	2,738	2,599	1,494	2,840	2,202	1,771
MACKERELS	16,812	14,192	15,034	16,770	26,257	16,275
SHARKS	3,973	5,996	6,532	4,786	6,228	2,759
MARGATE	466	256	298	437	298	229
CLASSIFIED						
FIRST CLASS	11,724	14,172	16,779	14,351	22,228	15,086
SECOND CLASS	12,613	19,736	14,966	9,598	8,861	8,612
THIRD CLASS	2,928	6,072	5,612	8,954	10,768	9,957
TRASH	21	13	22	0	0	0
OTHER FISHES	21,990	20,443	19,600	26,899	32,563	13,428
TOTAL FISHES	312,746	294,164	322,502	312,487	312,309	225,408
SHELLFISH						
CONCH	30,764	35,514	29,432	41,238	33,786	27,602
LAND CRAB	374	527	406	748	950	811
LOBSTER	30,544	27,071	27,639	27,980	28,442	25,103
OYSTER	91	421	98	220	29	287
OCTOPUS	2,855	2,493	2,341	3,274	3,570	2,482
OTHER SHELLFISH	2,277	2,728	1,958	3,660	3,020	3,614
TOTAL SHELLFISH	66,905	68,754	61,874	77,120	69,797	59,899
TOTAL	379,651	362,918	384,376	389,607	382,106	285,307

TABLE 6-B. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1998. Continued.

SPECIES	JULY (POUNDS)	AUGUST (POUNDS)	SEPTEMBER (POUNDS)	OCTOBER (POUNDS)	NOVEMBER (POUNDS)	DECEMBER (POUNDS)	TOTAL (POUNDS)
FISH							
TUNA	12,426	19,510	13,411	11,212	12,505	10,634	200,329
BALLYHOO	4,914	2,869	2,247	1,666	5,533	4,028	46,349
GRUNTS	10,098	8,473	4,578	3,271	6,486	6,302	111,843
HOGFISH	4,555	4,783	2,382	2,268	3,071	2,045	49,840
TRUNKFISH	7,655	8,385	2,917	3,482	4,353	5,985	90,744
DOLPHINFISH	3,064	2,444	2,080	6,429	9,211	22,593	137,397
SQUIRRELFISH	1,494	2,412	843	732	1,066	1,011	18,454
MULLET	4,896	5,950	2,726	2,854	3,986	2,380	53,229
JACKS	6,041	8,696	3,795	4,716	4,632	5,632	72,128
PARROTISH	9,440	7,889	3,138	2,610	3,473	7,904	97,837
GROUPERS							
RED HIND	5,210	4,843	3,660	2,536	2,484	2,420	52,715
NASSAU GROPER	1,462	3,846	903	1,195	2,566	507	18,981
OTHER GROUPERS	4,012	4,205	2,326	1,768	2,580	2,558	44,847
MOJARRA	1,314	1,760	849	790	1,212	1,240	19,655
SNAPPERS							
LANE SNAPPER	17,256	22,505	9,610	8,076	16,071	13,008	213,180
YELLOWTAIL SNAPPER	16,546	20,853	9,279	15,029	18,406	14,338	252,327
SILK SNAPPER	22,431	19,722	17,183	11,717	20,529	16,763	278,396
MUTTON SNAPPER	6,745	5,714	3,696	3,048	3,853	3,502	77,851
OTHER SNAPPER	6,851	6,127	4,245	4,047	4,663	3,965	77,019
TRIGGERFISH	7,008	6,479	2,865	2,877	3,251	2,373	64,565
BARRACUDA	3,685	6,897	1,673	1,154	2,767	752	33,811
PORGY	2,501	1,950	948	734	949	1,677	26,569
SNOOK	4,273	3,849	3,253	3,886	2,933	1,964	42,399
TARPON	0	65	135	30	0	231	701
GOATFISH	1,616	1,953	442	213	1,405	786	14,991
SARDINES	1,829	1,920	1,477	1,825	878	862	22,435
MACKERELS	22,037	17,826	7,011	6,992	11,148	10,025	180,379
SHARKS	3,342	2,933	1,355	2,320	8,330	2,751	51,305
MARGATE	263	158	81	101	50	38	2,675
CLASSIFIED							
FIRST CLASS	14,570	11,678	3,816	2,157	6,243	4,271	137,075
SECOND CLASS	15,653	5,006	4,645	1,618	8,929	10,311	120,548
THIRD CLASS	9,590	8,774	1,351	491	557	622	65,676
TRASH	0	30	0	0	0	0	86
OTHER FISHES	22,372	9,655	908	4,797	13,705	3,312	189,672
TOTAL FISHES	255,149	240,159	119,828	116,641	187,825	166,790	2,866,008
SHELLFISH							
CONCH	2,038	3,670	1,992	16,592	24,688	13,437	260,753
LAND CRAB	441	134	70	76	48	19	4,604
LOBSTER	29,428	36,972	14,721	14,472	20,208	16,821	299,401
OYSTER	108	0	86	0	152	30	1,522
OCTOPUS	2,882	3,138	1,818	3,295	6,443	4,932	39,523
OTHER SHELLFISH	2,711	2,246	1,131	2,244	3,163	1,335	30,087
TOTAL SHELLFISH	37,608	46,160	19,818	36,679	54,702	36,574	635,890
TOTAL	292,757	286,319	139,646	153,320	242,527	203,364	3,501,898

TABLE 6-C. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1999.

SPECIES	JANUARY (POUNDS)	FEBRUARY (POUNDS)	MARCH (POUNDS)	APRIL (POUNDS)	MAY (POUNDS)	JUNE (POUNDS)
FISH						
TUNA	15,111	12,389	14,273	14,186	16,173	18,027
BALLYHOO	3,957	4,376	4,501	4,060	4,103	4,692
GRUNTS	8,909	10,625	16,679	11,780	9,630	10,965
HOGFISH	4,340	3,512	4,416	4,734	5,014	4,130
TRUNKFISH	8,295	8,851	9,524	9,040	7,346	6,541
DOLPHINFISH	21,685	23,398	15,441	13,190	6,970	5,868
SQUIRRELISH	1,437	1,363	1,407	1,479	1,406	1,201
MULLET	5,347	5,726	6,329	5,108	5,541	6,836
JACK	7,619	7,505	8,873	5,037	7,402	8,149
PARROTISH	6,093	7,409	9,890	7,656	8,466	9,637
GROUPERS						
RED HIND	10,671	7,832	6,163	4,910	5,199	5,115
NASSAU GROPER	1,141	1,389	1,460	1,354	1,887	723
GROPER CATEGORY	6,842	5,846	5,705	5,442	5,664	4,420
MOJARRA	2,098	2,025	2,458	1,883	1,700	2,364
SNAPPERS						
LANE SNAPPER	20,748	19,874	20,622	22,082	18,732	16,182
YELLOWTAIL SNAPPER	25,809	28,439	39,185	25,142	28,340	22,881
SILK SNAPPER	20,096	21,760	27,548	25,149	26,369	21,557
MUTTON SNAPPER	6,749	7,117	14,628	17,529	11,773	8,950
OTHER SNAPPER	5,961	7,827	9,340	8,111	9,598	11,667
TRIGGERFISH	4,369	3,552	4,286	4,504	5,960	4,176
BARRACUDA	3,212	2,474	2,922	2,902	2,022	2,265
PORGY	2,143	2,840	3,662	2,738	2,944	3,482
SNOOK	3,821	4,918	4,613	3,823	3,791	4,501
TARPON	276	780	142	27	42	387
GOATFISH	1,272	1,266	1,168	8,882	1,182	1,340
SARDINES	3,439	2,982	2,461	3,139	2,071	2,659
MACKERELS	16,552	17,673	19,808	20,230	23,686	20,755
SHARKS	3,137	3,759	4,879	10,303	3,946	2,955
MARGATE	91	178	195	127	41	28
CLASSIFIED						
FIRST CLASS	5,627	6,397	10,599	6,586	7,182	7,132
SECOND CLASS	4,391	12,603	16,189	4,296	5,049	14,030
THIRD CLASS	3,067	4,259	4,788	2,923	2,442	2,048
TRASH	10	64	150	20	45	55
OTHER FISHES	10,879	14,028	17,361	14,933	16,995	16,790
TOTAL FISHES	245,194	265,036	311,665	273,305	258,711	252,508
SHELLFISH						
CONCH	17,506	22,872	31,202	24,738	25,049	13,527
LAND CRAB	216	370	314	704	373	112
LOBSTER	31,442	28,420	29,099	22,521	27,913	22,062
OYSTER	0	23	216	378	159	134
OCTOPUS	5,342	6,267	4,000	5,448	2,705	2,381
OTHER SHELLFISH	1,361	2,257	695	1,135	791	877
TOTAL SHELLFISH	55,867	60,209	65,526	54,924	56,990	39,093
TOTAL	301,061	325,245	377,191	328,229	315,701	291,601

TABLE 6-C. LANDINGS REPORTED BY SPECIES AND BY MONTH IN PUERTO RICO DURING 1999, Continued.

SPECIES	JULY (POUNDS)	AUGUST (POUNDS)	SEPTEMBER (POUNDS)	OCTOBER (POUNDS)	NOVEMBER (POUNDS)	DECEMBER (POUNDS)	TOTAL (POUNDS)
FISH							
TUNA	22,458	8,378	10,815	6,197	4,341	12,909	155,257
BALLYHOO	3,245	3,100	3,325	6,345	4,639	4,460	50,803
GRUNTS	9,500	8,322	8,758	7,870	8,068	6,600	117,706
HOGFISH	4,202	4,087	3,686	2,846	2,883	2,477	46,327
TRUNKFISH	7,437	6,658	5,393	5,002	5,138	4,800	84,025
DOLPHINFISH	1,936	2,479	1,862	3,834	11,059	22,439	130,161
SQUIRRELFISH	1,187	1,093	1,211	1,130	751	1,051	14,716
AJULET	6,667	4,652	4,481	4,549	3,665	2,931	61,832
JACKS	7,432	5,983	5,785	6,014	4,287	4,096	78,182
PARROTISH	6,290	6,127	5,856	4,640	4,202	4,524	80,790
GROUPERS							
RED HIND	4,894	4,260	5,265	4,035	4,178	3,543	66,065
NASSAU GROPER	824	2,861	1,728	639	444	517	14,967
OTHER GROUPERS	5,223	5,039	4,186	3,986	2,841	3,001	58,195
MOJARRA	2,549	2,027	1,731	1,497	715	1,049	22,096
SNAPPERS							
LANE SNAPPER	17,428	15,263	11,724	11,952	9,719	12,000	196,326
YELLOWTAIL SNAPPER	25,015	30,729	17,125	17,397	12,413	10,598	283,073
SILK SNAPPER	15,804	15,264	11,761	16,507	11,943	12,250	226,008
MUTTON SNAPPER	5,778	5,775	5,169	4,128	4,767	4,150	96,513
OTHER SNAPPER	7,267	7,444	5,643	4,751	4,037	2,965	84,611
TRIGGERFISH	4,945	4,678	4,601	3,628	2,533	2,356	49,588
BARRACUDA	1,734	1,946	1,747	1,930	1,162	713	25,029
PORGY	3,478	2,726	3,442	2,512	2,690	1,749	34,406
SNOOK	3,768	3,938	7,075	4,098	2,533	3,051	49,930
TARPON	89	150	200	133	28	120	2,374
GOATFISH	2,042	1,892	1,919	1,750	2,173	1,415	26,301
SARDINES	2,214	3,032	1,534	1,489	1,103	1,400	27,523
MACKERELS	18,850	19,725	10,808	8,844	5,872	9,382	192,185
SHARKS	3,615	3,534	2,586	3,037	1,777	1,125	44,653
MARGATE	83	59	62	35	56	35	990
CLASSIFIED							
FIRST CLASS	11,778	12,079	9,006	6,257	16,606	4,444	103,693
SECOND CLASS	11,083	8,345	11,480	5,888	4,278	9,322	106,954
THIRD CLASS	3,260	2,509	2,580	2,497	1,927	845	33,145
TRASH	0	30	10	72	19	0	475
OTHER FISHES	18,770	13,540	13,793	11,147	10,081	11,813	170,130
TOTAL FISHES	240,845	217,724	186,347	166,636	152,928	164,130	2,735,029
SHELLFISH							
CONCH	7,305	722	4,728	22,887	21,978	21,774	214,288
LAND CRAB	91	44	99	101	166	10	2,600
LOBSTER	25,754	22,756	29,337	25,221	32,455	30,826	327,806
OYSTER	166	44	0	0	50	120	1,290
OCTOPUS	3,066	2,659	2,915	3,351	2,681	2,672	43,487
OTHER SHELLFISH	2,057	498	544	703	466	1,602	12,986
TOTAL SHELLFISH	38,439	26,723	37,623	52,263	57,796	57,004	602,457
TOTAL	279,284	244,447	223,970	218,899	210,724	221,134	3,337,486

TABLE 7-A. AVERAGE POUNDS PER SINGLE LANDING TRIP IN PUERTO RICO DURING 1997.

MONTH	AVERAGE (Pounds)	STANDARD DEVIATION	SAMPLES
January	68	207	3,062
February	63	135	2,358
March	61	153	3,047
April	76	231	2,674
May	69	135	2,528
June	69	213	2,529
July	69	133	2,637
August	71	171	2,752
September	77	253	2,328
October	92	282	2,178
November	73	146	2,146
December	78	228	1,970
TOTAL AVERAGE	72	195	2,517
TOTAL			30,209

TABLE 7-B. AVERAGE POUNDS PER SINGLE LANDING TRIP IN PUERTO RICO DURING 1998.

MONTH	AVERAGE (Pounds)	STANDARD DEVIATION	SAMPLES
January	57	108	2,328
February	62	143	2,518
March	61	154	3,023
April	54	104	2,661
May	50	103	2,775
June	55	156	2,207
July	49	76	2,702
August	48	136	2,399
September	46	78	1,887
October	48	79	1,855
November	49	98	1,542
December	66	293	1,476
TOTAL AVERAGE	54	127	2,281
TOTAL			27,373

TABLE 7-C. AVERAGE POUNDS PER SINGLE LANDING TRIP IN PUERTO RICO DURING 1999.

MONTH	AVERAGE (Pounds)	STANDARD DEVIATION	SAMPLES
January	57	109	2,545
February	61	140	2,647
March	60	150	3,209
April	58	214	2,839
May	51	125	3,028
June	58	157	2,300
July	49	76	2,738
August	48	132	2,625
September	45	73	2,283
October	47	75	2,300
November	47	89	2,036
December	58	252	2,022
TOTAL AVERAGE	53	133	2,548
TOTAL			30,572

TABLE 8-A. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1997.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
1	<i>Ocyurus chrysurus</i>	846	342	0.09
2	<i>Mycteroperca tigris***</i>	481	1,118	0.30
3	<i>Panulirus argus</i>	379	245	0.07
4	<i>Haemulon plumieri</i>	293	68	0.02
5	<i>Lutjanus synagris</i>	281	107	0.03
6	<i>Epinephelus guttatus</i>	265	123	0.03
7	<i>Sparisoma viride</i>	248	107	0.03
8	<i>Sparisoma chrysopterum</i>	241	81	0.02
9	<i>Lutjanus vivanus</i>	192	58	0.02
10	<i>Scomberomorus cavalla</i>	164	671	0.18
11	<i>Epinephelus fulvus</i>	119	23	0.01
12	<i>Hemiramphus brasiliensis</i>	99	26	0.01
13	<i>Caranx ruber</i>	91	57	0.02
14	<i>Rhomboptilus aurorubens</i>	82	16	0.00
15	<i>Calamus pennatula</i>	76	18	0.00
16	<i>Cardisoma quanhumi</i>	63	18	0.00
17	<i>Pseudupeneus maculatus</i>	60	6	0.00
18	<i>Balistes vetula</i>	56	23	0.01
19	<i>Lachnolaimus maximus</i>	50	49	0.01
20	<i>Lutjanus analis</i>	46	27	0.01
21	<i>Lutjanus apodus</i>	37	31	0.01
22	<i>Haemulon sciurus</i>	36	9	0.00
23	<i>Epinephelus Cruentatus</i>	35	7	0.00
24	<i>Holocentridae</i>	35	5	0.00
25	<i>Calamus bajonado</i>	34	6	0.00
26	<i>Scomberomorus regalis</i>	32	47	0.01
27	<i>Sparidae</i>	32	11	0.00
28	<i>Acanthostracion quadricornis</i>	26	6	0.00
29	<i>Coryphaenidae</i>	23	74	0.02
30	<i>Mugilidae</i>	22	32	0.01
31	<i>Mulloidichthys martinicus</i>	22	3	0.00
32	<i>Centropomus undecimalis</i>	21	11	0.00
33	<i>Scarus vetula</i>	20	10	0.00
34	<i>Caulolatilus Cyanops</i>	19	5	0.00
35	<i>Haemulon flavolineatum</i>	17	3	0.00
36	<i>Euthynnus alletteratus</i>	16	22	0.01
37	<i>Lutjanidae</i>	16	6	0.00
38	<i>Mycteroperca venenosa</i>	14	53	0.01
39	<i>Scaridae</i>	13	5	0.00
40	<i>Anisotremus virginicus</i>	11	4	0.00
41	<i>Centropomidae</i>	10	4	0.00
42	<i>Pristipomoides macrophthalmus</i>	10	4	0.00
43	<i>Acanthostracion polygonius</i>	10	3	0.00
44	<i>Lactophrys triqueter</i>	8	1	0.00
45	<i>Scombridae</i>	7	20	0.01

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

*** This species were measured on Vieques Island during the sexual aggregation of February and March.

TABLE 8-A. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1997. Continued.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
46	<i>Lutjanus mahogoni</i>	7	4	0.00
47	<i>Thunnus atlanticus</i>	6	31	0.01
48	<i>Caranx latus</i>	6	6	0.00
49	<i>Balistidae</i>	6	6	0.00
50	<i>Haemulon album</i>	6	3	0.00
51	<i>Diapterus plumieri</i>	6	3	0.00
52	<i>Lactophrys bicaudalis</i>	6	0	0.00
53	<i>Lutjanus jocu</i>	5	4	0.00
54	<i>Isurus oxyrinchus</i>	5	2	0.00
55	<i>Mugil curema</i>	5	1	0.00
56	<i>Ephippidae</i>	4	9	0.00
57	<i>Epinephelus adscensionis</i>	4	5	0.00
58	<i>Etelis oculatus</i>	4	3	0.00
59	<i>Carangidae</i>	4	2	0.00
60	<i>Chaetodon capistratus</i>	4	0	0.00
61	<i>Holocentrus rufus</i>	3	0	0.00
62	<i>Carcharhinidae</i>	2	5	0.00
63	<i>Scarus coeruleinus</i>	2	1	0.00
64	<i>Bodianus rufus</i>	2	1	0.00
65	<i>Sparisoma aurofrenatum</i>	2	1	0.00
66	<i>Ostraciidae</i>	2	0	0.00
67	<i>Caranx bartholomaei</i>	2	0	0.00
68	<i>Epinephelus afer</i>	2	0	0.00
69	<i>Epinephelus morio</i>	1	7	0.00
70	<i>Euthynnus pelamis</i>	1	4	0.00
71	<i>Scarus guacamaia</i>	1	3	0.00
72	<i>Caranx cryos</i>	1	2	0.00
73	<i>Dasyatis americana</i>	1	1	0.00
74	<i>Canthidermis sufflamen</i>	1	1	0.00
75	<i>Caranx hippos</i>	1	1	0.00
76	<i>Anisotremus surinamensis</i>	1	1	0.00
77	<i>Scarus coeruleus</i>	1	1	0.00
78	<i>Sphyraena picudilla</i>	1	0	0.00
79	<i>Crassostrea rhizophorae</i>	1	0	0.00
80	<i>Rhincodontidae</i>	1	0	0.00
81	<i>Gerres cinereus</i>	1	0	0.00
82	<i>Acanthurus bahianus</i>	1	0	0.00
TOTAL		4,767	3,672	100.00

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

TABLE 8-B. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1998.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
1	<i>Ocyurus chrysurus</i>	2,207	1,198	18.07
2	<i>Haemulon plumieri</i>	1,095	244	3.68
3	<i>Panulirus argus</i>	908	673	0.10
4	<i>Lutjanus synagris</i>	701	144	2.17
5	<i>Lutjanus vivanus</i>	623	114	1.71
6	<i>Sparisoma viride</i>	617	272	4.11
7	<i>Sparisoma chrysopterum</i>	605	221	3.34
8	<i>Epinephelus guttatus</i>	576	232	3.50
9	<i>Pseudupeneus maculatus</i>	526	38	0.58
10	<i>Caranx ruber</i>	478	210	3.17
11	<i>Mycteroperca tigris</i>	460	1,217	0.18
12	<i>Scomberomorus regalis</i>	338	224	3.38
13	<i>Epinephelus fulvus</i>	274	61	0.91
14	<i>Calamus pennatula</i>	273	51	0.77
15	<i>Lutjanus analis</i>	219	212	3.20
16	<i>Lutjanus apodus</i>	214	96	1.45
17	<i>Rhomboplites aurorubens</i>	208	35	0.53
18	<i>Haemulon sciurus</i>	206	56	0.84
19	<i>Sparidae</i>	202	57	0.87
20	<i>Balistes vetula</i>	198	103	1.55
21	<i>Acanthostracion quadricornis</i>	150	28	0.00
22	<i>Lachnolaimus maximus</i>	126	101	1.52
23	<i>Scomberomorus cavalla</i>	108	282	4.25
24	<i>Euthynnus pelamis</i>	105	91	1.38
25	<i>Selar crumenophthalmus</i>	103	15	0.23
26	<i>Caranx latus</i>	90	30	0.45
27	<i>Euthynnus alletteratus</i>	89	17	0.25
28	<i>Lutjanus buccanella</i>	85	26	0.39
29	<i>Thunnus albacares</i>	80	30	0.45
30	<i>Acanthostracion poligonius</i>	77	22	0.00
31	<i>Coryphaena hippurus</i>	71	0	0.00
32	<i>Scaridae</i>	69	27	0.41
33	<i>Lactophrys bicaudalis</i>	68	22	0.00
34	<i>Holocentridae</i>	65	14	0.21
35	<i>Mulloidichthys martinicus</i>	63	7	0.10
36	<i>Anisotremus virginicus</i>	59	17	0.25
37	<i>Etelis oculatus</i>	59	10	0.15
38	<i>Lutjanus mahogoni</i>	49	19	0.29
39	<i>Calamus bajonado</i>	45	10	0.15
40	<i>Caranx bartholomaei</i>	40	5	0.07
41	<i>Lutjanus griseus</i>	38	27	0.40
42	<i>Haemulon flavolineatum</i>	37	6	0.10
43	<i>Centropomus undecimalis</i>	33	38	0.58
44	<i>Lutjanus jocu</i>	30	22	0.34
45	<i>Caranx cryos</i>	29	27	0.41

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

*** This species were measured on Vieques Island during the sexual aggregation of February and March.

TABLE 8-B. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1998. Continued.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
46	<i>Acanthurus bahianus</i>	28	7	0.10
47	<i>Lactophrys triqueter</i>	28	5	0.00
48	<i>Ostraciidae</i>	26	14	0.21
49	<i>Acanthocybium solanderi</i>	25	6	0.10
50	<i>Scarus vetula</i>	22	8	0.13
51	<i>Thunnus atlanticus</i>	22	4	0.06
52	<i>Odontoscion dentex</i>	20	9	0.13
53	<i>Clupeidae</i>	20	5	0.08
54	<i>Hemiramphus brasiliensis</i>	20	2	0.03
55	<i>Thunnus alalunga</i>	19	7	0.10
56	<i>Mycteroperca bonaci</i>	16	10	0.00
57	<i>Gerreidae</i>	16	2	0.04
58	<i>Pristipomoides macrourus</i>	15	4	0.06
59	<i>Pomacanthus arcuatus</i>	15	0	0.00
60	<i>Gerres cinereus</i>	14	3	0.05
61	<i>Anisotremus surinamensis</i>	12	3	0.05
62	<i>Coryphaenidae</i>	11	15	0.22
63	<i>Scarus coeruleus</i>	11	5	0.08
64	<i>Vomer setapinnis</i>	11	1	0.01
65	<i>Mugilidae</i>	10	15	0.22
66	<i>Scarus taeniopterus</i>	10	3	0.05
67	<i>Holocentrus ascensionis</i>	10	1	0.01
68	<i>Sparisoma aurofrenatum</i>	9	3	0.05
69	<i>Holacanthus ciliaris</i>	9	3	0.04
70	<i>Priacanthus arenatus</i>	9	3	0.04
71	<i>Kyphosus sectatrix</i>	9	1	0.02
72	<i>Strombus gigas</i>	8	16	0.00
73	<i>Haemulon album</i>	8	6	0.08
74	<i>Epinephelus cruentatus</i>	8	3	0.05
75	<i>Micropogonias furnieri</i>	8	2	0.03
76	<i>Archosargus rhomboidalis</i>	8	0	0.00
77	<i>Carcharhinidae</i>	7	17	0.25
78	<i>Epinephelus striatus</i>	7	12	0.18
79	<i>Epinephelus adscensionis</i>	7	5	0.07
80	<i>Haemulon parra</i>	7	2	0.02
81	<i>Sphyraena picudilla</i>	6	2	0.03
82	<i>Melichthys niger</i>	6	0	0.00
83	<i>Scombridae</i>	5	9	0.14
84	<i>Epinephelus fulvus</i>	5	6	0.10
85	<i>Balistes capriscus</i>	5	2	0.00

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

TABLE 8-B. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1998. Continued.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% * *
86	<i>Carangidae</i>	5	2	0.03
87	<i>Haemulon carbonarium</i>	5	2	0.02
88	<i>Serranus phoebe</i>	5	0	0.00
89	<i>Sphyraena barracuda</i>	5	0	0.01
90	<i>Scyllarides aequinoctialis</i>	4	2	0.00
91	<i>Mycteroperca venenosa</i>	3	11	0.16
92	<i>Ephippidae</i>	3	2	0.04
93	<i>Mugil curema</i>	3	1	0.02
94	<i>Caranx lugubris</i>	3	0	0.00
95	<i>Sphyraenidae</i>	2	12	0.18
96	<i>Cromis multilineata</i>	2	11	0.17
97	<i>Hexanchidae</i>	2	2	0.04
98	<i>Seriola dumerili</i>	2	2	0.03
99	<i>Malacanthus plumieri</i>	2	0	0.00
100	<i>Apsilus dentatus</i>	2	0	0.00
101	<i>Pomacanthus paru</i>	2	0	0.00
102	<i>Caranx hippos</i>	1	1	0.02
103	<i>Dipterus rhombus</i>	1	1	0.01
104	<i>Lagocephalus laevigatus</i>	1	0	0.01
105	<i>Sciaenidae</i>	1	0	0.01
106	<i>Balistidae</i>	1	0	0.01
107	<i>Micropterus salmoides</i>	1	0	0.00
108	<i>Aetobatus narinari</i>	1	0	0.00
109	<i>Syngnathidae</i>	1	0	0.00
110	<i>Sphyrnidae</i>	1	0	0.00
111	<i>Promethichthys prometheus</i>	1	0	0.00
112	<i>Makaira nigricans</i>	1	0	0.00
113	<i>Istiophorus platypterus</i>	1	0	0.00
114	<i>Hexanchus vitulus</i>	1	0	0.00
115	<i>Sphyrna mokarran</i>	1	0	0.00
116	<i>Epinephelus mystacinus</i>	1	0	0.00
117	<i>Priacanthidae</i>	1	0	0.00
118	<i>Haemulon aurolineatum</i>	1	0	0.00
	TOTAL	13,275	6,517	100

* Species rank according to total number of individual measured and weight.

* * Percentage of total individuals measured.

TABLE 8-C. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1999.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% * *
1	<i>Ocyurus chrysurus</i>	3,101	1,094	0.15
2	<i>Haemulon plumieri</i>	1,526	340	0.05
3	<i>Pamphilus argus</i>	1,364	1,106	0.15
4	<i>Lutjanus synagris</i>	1,282	219	0.03
5	<i>Sparisoma viride</i>	1,039	455	0.06
6	<i>Sparisoma chrysopterum</i>	1,037	382	0.05
7	<i>Epinephelus guttatus</i>	987	401	0.06
8	<i>Lutjanus vivanus</i>	813	143	0.02
9	<i>Euthynnus alletteratus</i>	478	241	0.03
10	<i>Caranx ruber</i>	375	128	0.02
11	<i>Lutjanus apodus</i>	359	150	0.02
12	<i>Pseudupeneus maculatus</i>	345	23	0.00
13	<i>Scomberomorus regalis</i>	335	55	0.01
14	<i>Calamus pennatula</i>	306	62	0.01
15	<i>Lutjanus analis</i>	304	141	0.02
16	<i>Selar crumenophthalmus</i>	291	0	0.00
17	<i>Epinephelus fulvus</i>	282	62	0.01
18	<i>Haemulon sciurus</i>	280	69	0.01
19	<i>Odontoscion dentex</i>	276	95	0.01
20	<i>Coryphaena Hippurus</i>	271	48	0.01
21	<i>Lachnolaimus maximus</i>	265	249	0.03
22	<i>Opisthonema oglinum</i>	263	0	0.00
23	<i>Scomberomorus cavalla</i>	253	439	0.06
24	<i>Balistes vetula</i>	251	113	0.02
25	<i>Rhomboplites aurorubens</i>	219	29	0.00
26	<i>Caranx latus</i>	148	28	0.00
27	<i>Thunnus albacares</i>	134	58	0.01
28	<i>Mycteroperca tigris***</i>	132	240	0.03
29	<i>Euthynnus pelamis</i>	121	10	0.00
30	<i>Thunnus atlanticus</i>	121	7	0.00
31	<i>Calamus bajonado</i>	117	32	0.00
32	<i>Etelis oculatus</i>	116	85	0.01
33	<i>Sparidae</i>	113	33	0.00
34	<i>Haemulon flavolineatum</i>	113	17	0.00
35	<i>Acanthocybium solanderi</i>	98	26	0.00
36	<i>Acanthostracion quadricornis</i>	85	17	0.00
37	<i>Gerreidae</i>	84	19	0.00
38	<i>Thunnus alalunga</i>	72	6	0.00
39	<i>Holocentrus ascensionis</i>	69	8	0.00
40	<i>Mugil liza</i>	69	0	0.00
41	<i>Lutjanus jocu</i>	66	51	0.01
42	<i>Scarus vetula</i>	66	30	0.00
43	<i>Lutjanus mahogoni</i>	65	26	0.00
44	<i>Acanthostracion polionotus</i>	65	18	0.00
45	<i>Lutjanus buccanella</i>	62	13	0.00

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

*** This species were measured on Vieques Island during the sexual aggregation of February and March.

TABLE 8-C. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1999. Continued.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
46	<i>Scaridae</i>	57	26	0.00
47	<i>Anisotremus virginicus</i>	52	14	0.00
48	<i>Scarus taeniopterus</i>	48	16	0.00
49	<i>Holocentridae</i>	48	11	0.00
50	<i>Caranx bartholomaei</i>	44	53	0.01
51	<i>Centropomus undecimalis</i>	43	0	0.00
52	<i>Vomer setapinnis</i>	41	0	0.00
53	<i>Holacanthus ciliaris</i>	34	11	0.00
54	<i>Clupeidae</i>	30	8	0.00
55	<i>Epinephelus cruentatus</i>	29	11	0.00
56	<i>Haemulon parra</i>	29	7	0.00
57	<i>Mulloidichthys martinicus</i>	29	6	0.00
58	<i>Strombus gigas</i>	25	11	0.00
59	<i>Caranx cryos</i>	25	0	0.00
60	<i>Lactophrys triqueter</i>	23	7	0.00
61	<i>Sphyraenidae</i>	22	7	0.00
62	<i>Centropomidae</i>	22	0	0.00
63	<i>Megalops atlantica</i>	21	21	0.00
64	<i>Acanthurus bahianus</i>	20	5	0.00
65	<i>Diapterus rhombus</i>	20	0	0.00
66	<i>Lactophrys bicaudalis</i>	18	9	0.00
67	<i>Epinephelus fulvus</i>	17	4	0.00
68	<i>Pristipomoides macrophthalmus</i>	16	7	0.00
69	<i>Lobotes surinamensis</i>	16	0	0.00
70	<i>Epinephelus striatus</i>	15	21	0.00
71	<i>Sparisoma aurofrenatum</i>	14	4	0.00
72	<i>Mycteroperca venenosa</i>	13	13	0.00
73	<i>Haemulon album</i>	13	11	0.00
74	<i>Anisotremus surinamensis</i>	13	5	0.00
75	<i>Apsilus dentatus</i>	11	18	0.00
76	<i>Coryphaenidae</i>	10	39	0.01
77	<i>Epinephelus adscensionis</i>	10	24	0.00
78	<i>Balistes capriscus</i>	10	19	0.00
79	<i>Hemiramphus brasiliensis</i>	10	0	0.00
80	<i>Echeneis naucrates</i>	9	8	0.00
81	<i>Bodianus rufus</i>	9	4	0.00
82	<i>Tylosurus crocodilus</i>	8	4	0.00
83	<i>Ictalurus punctatus</i>	8	2	0.00
84	<i>Pomacanthus arcuatus</i>	8	2	0.00
85	<i>Mycteroperca bonaci</i>	7	21	0.00

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

TABLE 8-C. SUMMARY OF BIOSTATISTICS DATA (COMPLETE AND INCOMPLETE SAMPLES) IN PUERTO RICO DURING JANUARY - DECEMBER 1999. Continued.

RANK*	SPECIES	NUMBER MEASURED	WEIGHT (KILOGRAMS)	% **
86	<i>Scombridae</i>	6	8	0.00
87	<i>Lepomis macrochirus</i>	6	1	0.00
88	<i>Lutjanus griseus</i>	5	12	0.00
89	<i>Scarus guacamaia</i>	5	8	0.00
90	<i>Monacanthus setifer</i>	5	3	0.00
91	<i>Kyphosus sectatrix</i>	5	2	0.00
92	<i>Gerres cinereus</i>	5	1	0.00
93	<i>Syngnathidae</i>	5	1	0.00
94	<i>Epinephelus morio</i>	5	0	0.00
95	<i>Polydactylus virginicus</i>	4	0	0.00
96	<i>Canthidermis sufflamen</i>	3	3	0.00
97	<i>Scarus coelestinus</i>	3	2	0.00
98	<i>Malacanthus plumieri</i>	3	1	0.00
99	<i>Panulirus guttatus</i>	3	1	0.00
100	<i>Priacanthus arenatus</i>	3	0	0.00
101	<i>Trachinotus falcatus</i>	3	0	0.00
102	<i>Carcharhinidae</i>	2	6	0.00
103	<i>Seriola dumerili</i>	2	4	0.00
104	<i>Muraenidae</i>	2	2	0.00
105	<i>Epinephelus mystacinus</i>	2	1	0.00
106	<i>Abudefduf saxatilis</i>	2	1	0.00
107	<i>Cantherhines macrocerus</i>	2	1	0.15
108	<i>Hexanchidae</i>	2	1	0.00
109	<i>Alectis ciliaris</i>	2	1	0.00
112	<i>Scarus coeruleus</i>	2	0	0.00
113	<i>Epinephelus itajara</i>	1	6	0.00
114	<i>Ginglymostoma cirratum</i>	1	4	0.00
115	<i>Halichoeres radiatus</i>	1	1	0.00
116	<i>Sparisoma rubripinne</i>	1	1	0.00
117	<i>Cantherines pullus</i>	1	1	0.00
118	<i>Mugil curema</i>	1	0	0.00
119	<i>Caranx hippos</i>	1	0	0.00
120	<i>Epinephelus afer</i>	1	0	0.00
121	<i>Pomadasys crocro</i>	1	0	0.00
122	<i>Myripristis jacobus</i>	1	0	0.00
123	<i>Isurus oxyrinchus</i>	1	0	0.00
124	<i>Caranx lugubris</i>	1	0	0.00
125	<i>Elagatis bipinnulatus</i>	1	0	0.00
126	<i>Carcharhinus perezi</i>	1	0	0.00
	TOTAL	19,216	7,271	100.00

* Species rank according to total number of individual measured and weight.

** Percentage of total individuals measured.

TABLE 9-A. MOST FREQUENTLY SAMPLED (COMPLETE AND INCOMPLETE SAMPLES) SPECIES BY GEAR TYPE, NUMBER AND WEIGHT, IN PUERTO RICO DURING 1997.

SPECIES	POTS (FISH AND LOBSTER POTS)			GILL AND TRAMMEL NETS			HAND AND TROLL LINES			DIVING (SCUBA AND SKIN)			TOTAL WEIGHT (KG)
	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	
<i>Lutjanus synagris</i>	179	82.50		77.39	65	16.30	15.29	35	7.10	6.66	0	0.00	106.60
<i>Lutjanus vivimus</i>	109	30.50		53.04	0	0.00	0.00	83	27.00	46.96	0	0.00	57.50
<i>Ocyurus chrysurus</i>	136	37.50		10.96	104	30.20	8.83	578	271.00	79.22	0	0.00	342.10
<i>Haemulon plumieri</i>	166	36.20		60.03	51	13.30	22.06	72	18.10	30.02	0	0.00	60.30
<i>Pseudopeneus maculatus</i>	54	5.20		85.25	0	0.00	0.00	4	0.60	9.84	0	0.00	6.10
<i>Sparisoma viride</i>	40	12.28		11.44	175	80.00	74.56	0	0.00	25	11.90	11.09	107.30
<i>Sparisoma chrysopurum</i>	91	24.90		30.82	150	55.40	68.56	0	0.00	0	0.00	0.00	80.80
<i>Panulirus argus</i>	109	57.20		23.39	0	0.00	0.00	0	0.00	0.00	270	187.20	76.56
<i>Scomberomorus regalis</i>	0	0.00		0	0.00	0.00	31	46.00	98.50	1	0.60	1.28	244.50
<i>Calamus pennula</i>	35	7.70		43.02	27	7.30	40.78	2	0.40	2.23	0	0.00	17.90

TABLE 9-B. MOST FREQUENTLY SAMPLED (COMPLETE AND INCOMPLETE SAMPLES) SPECIES BY GEAR TYPE, NUMBER AND WEIGHT, IN PUERTO RICO DURING 1998.

SPECIES	POTS (FISH AND LOBSTER POTS)			GILL AND TRAMMEL NETS			HAND AND TROLL LINES			DIVING (SCUBA AND SKIN)			TOTAL WEIGHT (KG.)
	N	WEIGHT (KG.)	% TOTAL WEIGHT	N	WEIGHT (KG.)	% TOTAL WEIGHT	N	WEIGHT (KG.)	% TOTAL WEIGHT	N	WEIGHT (KG.)	% TOTAL WEIGHT	
<i>Lutjanus synagris</i>	401	72.10	50.14	26	5.90	4.10	229	59.60	41.45	5	2.40	1.67	143.80
<i>Lutjanus vivanus</i>	254	56.60	49.87	0	0.00	0.00	321	47.30	41.67	0	0.00	0.00	113.50
<i>Ocyurus chrysurus</i>	120	34.30	2.86	191	66.20	5.51	1698	1,024.60	85.54	5	1.70	0.14	1,197.80
<i>Haemulon plumieri</i>	503	104.20	42.74	470	108.80	44.63	100	27.20	11.16	0	0.00	0.00	243.80
<i>Pseudopenaeus maculatus</i>	524	37.80	98.69	0	0.00	0.00	2	0.50	1.31	0	0.00	0.00	38.30
<i>Sparisoma viride</i>	67	24.20	3.89	491	215.30	79.13	0	0.00	0.00	58	32.60	11.98	272.10
<i>Sparsioma chrysopurpureum</i>	219	68.30	30.89	338	135.20	61.15	9	3.00	1.36	19	7.70	3.48	221.10
<i>Panulirus argus</i>	262	149.40	22.20	16	13.90	2.07	0	0.00	0.00	630	509.90	75.77	673.00
<i>Scomberomorus regalis</i>	0	0.00	0.00	8	4.60	2.05	283	215.50	96.12	3	4.10	1.83	224.20
<i>Calamus pennatula</i>	33	4.80	9.45	190	37.60	74.02	0	0.00	0.00	8	3.10	6.10	50.80

TABLE 9.C. MOST FREQUENTLY SAMPLED (COMPLETE AND INCOMPLETE SAMPLES) SPECIES BY GEAR TYPE, NUMBER AND WEIGHT, IN PUERTO RICO DURING 1999.

SPECIES	POTS (FISH AND LOBSTER POTS)			GILL AND TRAMMEL NETS			HAND AND TROLL LINES			DIVING (SCUBA AND SKIN)			TOTAL WEIGHT (KG)
	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	N	WEIGHT (KG)	% TOTAL WEIGHT	
<i>Lutjanus synagris</i>	905	155.90		71.12	27	6.60	3.01	184	27.30	12.45	0	0.00	0.00
<i>Lutjanus vivanus</i>	380	53.90		37.72	0	0.00	0.00	433	89.00	62.28	0	0.00	0.00
<i>Ocyurus chrysurus</i>	219	76.00		6.95	85	28.50	2.61	2297	808.00	73.87	63	18.90	1.73
<i>Haemulon plumieri</i>	578	132.60		38.95	781	174.10	51.15	123	23.20	6.82	10	2.60	0.59
<i>Pseudopenaeus maculatus</i>	327	21.50		92.67	1	0.08	0.34	17	1.70	7.33	0	0.00	0.00
<i>Sparisoma viride</i>	76	24.80		5.45	911	413.20	90.87	2	1.10	0.74	45	14.20	3.12
<i>Sparisoma chrysopurum</i>	233	67.60		17.70	779	306.00	80.10	15	4.90	1.28	8	3.20	0.84
<i>Panulirus argus</i>	310	179.30		16.21	26	17.10	1.55	0	0.00	0.00	1008	910.00	82.26
<i>Scomberomorus regalis</i>	0	0.00		0	0.00	0	0.00	203	54.40	98.91	1	0.80	1.45
<i>Catania pennata</i>	38	6.60		10.68	193	38.80	62.78	0	0.00	0.00	4	0.90	1.46
													61.80

TABLE 10-A. MEAN AND STANDARD DEVIATION OF
SPINY LOBSTER CARAPACE LENGTH IN MILLIMETERS
BY SEX AND BY MONTH IN PUERTO RICO DURING 1997.

MONTH	FEMALE			MALE		
	MEAN	STD	N	MEAN	STD	N
JANUARY	79	10	4	93	12	3
FEBRUARY	90	11	22	91	16	26
MARCH	93	16	23	95	17	18
APRIL			0			0
MAY	87	12	21	90	17	28
JUNE	86	9	15	88	13	21
JULY	95	8	11	95	8	10
AUGUST	93	11	16	104	15	31
SEPTEMBER	95	13	6	91	7	10
OCTOBER	107	15	25	100	17	21
NOVEMBER	93	9	21	99	17	32
DECEMBER			0			0
TOTAL	93	14	164	95	16	200

TABLE 10-B. MEAN AND STANDARD DEVIATION OF
SPINY LOBSTER CARAPACE LENGTH IN MILLIMETERS
BY SEX AND BY MONTH IN PUERTO RICO DURING 1998.

MONTH	FEMALE			MALE		
	MEAN	STD	N	MEAN	STD	N
JANUARY	96	11	20	102	17	17
FEBRUARY	102	11	33	102	15	51
MARCH	97	13	20	104	14	22
APRIL	97	10	25	107	13	28
MAY	96	13	47	103	20	29
JUNE	92	17	65	105	20	57
JULY	90	9	12	97	13	49
AUGUST	100	16	12	98	7	28
SEPTEMBER	88	12	8	93	14	33
OCTOBER	91	13	20	93	13	71
NOVEMBER	98	14	42	106	21	26
DECEMBER	90	12	62	99	17	66
TOTAL	93	17	366	100	18	477

**TABLE 10-C. MEAN AND STANDARD DEVIATION OF
SPINY LOBSTER CARAPACE LENGTH IN MILLIMETERS
BY SEX AND BY MONTH IN PUERTO RICO DURING 1999.**

MONTH	FEMALE			MALE		
	MEAN	STD	N	MEAN	STD	N
JANUARY	97	13	60	106	18	46
FEBRUARY	100	10	17	106	11	26
MARCH	103	14	134	108	18	31
APRIL	101	10	40	107	16	49
MAY	96	13	57	100	13	48
JUNE	94	10	57	99	13	57
JULY	99	12	32	105	18	36
AUGUST	98	9	8	105	16	17
SEPTEMBER	97	12	64	100	13	78
OCTOBER	98	10	33	96	14	23
NOVEMBER	92	8	11	98	17	15
DECEMBER	93	9	81	95	9	54
TOTAL	98	12	594	103	16	480

TABLE 11-A. - BIOSTATISTICS DATA- CATCH PER UNIT EFFORT FOR THE MOST SAMPLED GEARS IN PUERTO RICO DURING 1997.

GEAR	n	MEAN CATCH PER UNIT EFFORT (POUNDS)	EFFORT UNIT	STANDARD DEVIATION	MEAN GEAR AMOUNT	MEAN UNIT OF TIME
Fish Pot	35	1	Trap/Day	1	30	5
Hand Line	110	5.8	Hook/Hour	8.6	3	7
SCUBA Diving	40	8.1	Man/Hour	8.7	1	4
Trammel Net	11	0.6	Fathom/Hour	0.5	542	6
Troll Line	7	2.7	Hook/Hour	2.3	4	7

TABLE 11-B. - BIOSTATISTICS DATA- CATCH PER UNIT EFFORT FOR THE MOST SAMPLED GEARS IN PUERTO RICO DURING 1998.

GEAR	n	MEAN CATCH PER UNIT EFFORT (POUNDS)	EFFORT UNIT	STANDARD DEVIATION	MEAN GEAR AMOUNT	MEAN UNIT OF TIME
Beach Seine	4	0.02	Fathom/Hour	0.2	233	4
Fish Pot	44	1.33	Trap/Day	2.6	32	4
Gill Net	13	0.06	Fathom/Hour	0.07	178	6
Hand Line	86	4.45	Hook/Hour	9.08	3	8
Lobster Pot	6	0.4	Trap/Day	0.4	34	6
SCUBA Diving	85	9.7	Man/Hour	5.3	1	4
Trammel Net	11	0.13	Fathom/Hour	0.11	440	5
Troll Line	13	10.44	Hook/Hour	12.06	3	7

TABLE 11-C. - BIOSTATISTICS DATA- CATCH PER UNIT EFFORT FOR THE MOST SAMPLED GEARS IN PUERTO RICO DURING 1999.

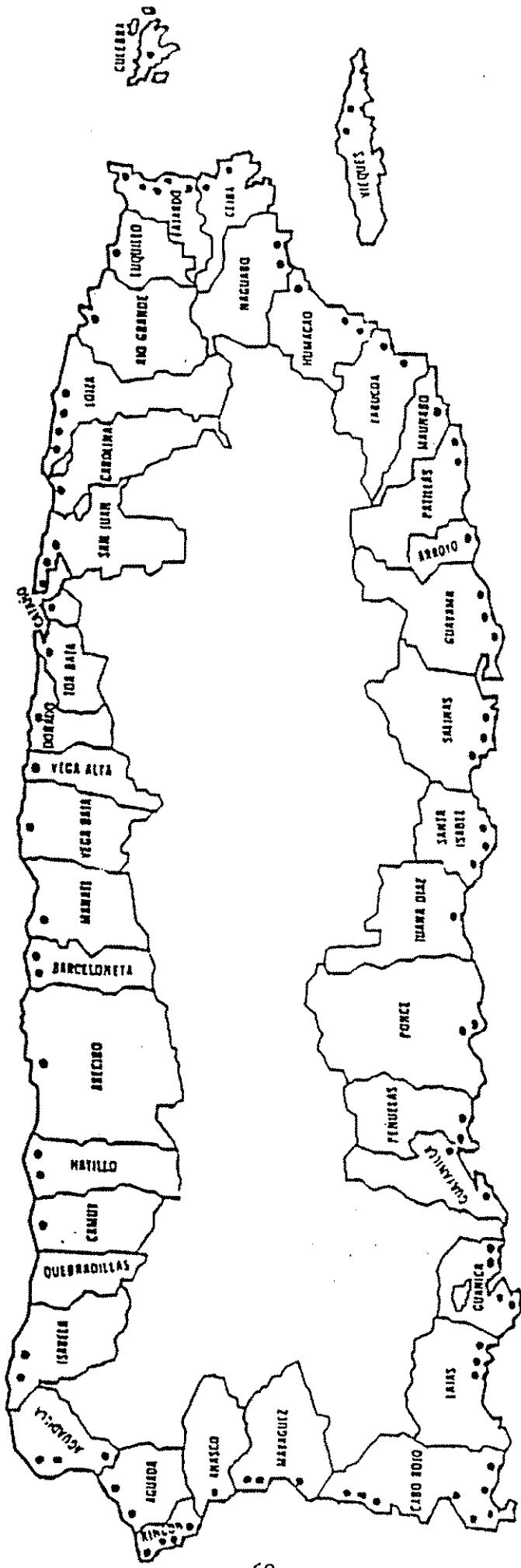
GEAR	n	MEAN CATCH PER UNIT EFFORT (POUNDS)	EFFORT UNIT	STANDARD DEVIATION	MEAN GEAR AMOUNT	MEAN UNIT OF TIME
Fish Pot	55	0.56	Trap/Day	0.65	35	5
Hand Line	85	2.54	Hook/Hour	3.00	5	8
Trammel Net	32	0.11	Fathom/Hour	0.16	520	5
SCUBA Diving	84	9.83	Man/Hour	7.59	2	4
Lobster Pot	4	0.69	Trap/Day	0.5	50	4
Troll Line	27	8.27	Hook/Hour	9.92	2	10
Beach Seine	22	0.4	Fathom/Hour	0.4	163	5
Gill Net	9	0.08	Fathom/Hour	0.08	362	5

TABLE 12. NUMBER OF ACTIVE FISHERMEN AND GEARS IN PUERTO RICO DURING 1997-99.
 Data from Puerto Rico Fishing Census 1995-96 (Matos, 1996).

FISHERMEN CLASS	1995-96
Full time	1,061
Part time	496
Helper	201
Total number of fishermen	1,758
VESSELS AND MOTORS	
Fishing vessels	1,501
Motors	1,218
FISHING GEARS	
Nets	
Beach Seine	231
Gill net	1,385
Trammel net	861
Cast net	1,136
Lines	
Long line	920
Bottom line	6,727
Troll line	1,028
Rod and reel	1,130
Traps	
Fish pot	11,213
Lobster pot	4,268
Diving equipment	
Spear	509
Gaff	1,317
Basket	110
Snare	234
Total unit of gears	31,069

FIGURES

Figure 1—Coastal Municipalities and Fishing Centers in Puerto Rico.



Gobierno de Puerto Rico
 DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES
 Laboratorio de Investigaciones Pesqueras
 P.O Box 3665 Mayagüez, P.R. 00681
 Tel. 833-2025



Fecha del desembarco ____ / ____ / ____
 Mes Día Año

Pueblo _____

Centro de desembarco _____ Uso Oficial _____

Número de salidas _____ Número de horas pescando _____

Nombre del pescador _____

Número licencia del pescador _____

Nombre de proel 1 _____

Número de licencia del proel 1 _____

Nombre de proel 2 _____

Número licencia del proel 2 _____

Profundidad máxima en brazas _____ Profundidad mínima en brazas _____

Nombre del área donde capturó la pesca _____

Pesca capturada a una distancia de la costa:

Mayor de 10 millas _____ Menor de 10 millas _____

CLASE DE PESCAZO	PESO	PRECIO POR LIBRA	ARTE	CANTIDAD O TANAGO DE ARTE
(216) ATÚN ALETA ANARILLA				
(229) BONITO				
(230) VACA				
(227) ALBACORA				
(225) ATÚMES				
(233) BALAU				
(155) BOQUICOLORADO				
(189) CAPITAN				
(156) CHAPINES				
(127) DORADO				
(164) GALLOS				
(199) JAREA				
(113) COHUEA				

LISTA DE PESCAZO Y MARISCO CONTINUA AL REVERSO DE ESTA HOJA

Figure 2. Landings data Collection ticket.

CLASE DE PESADO	PESO	PRECIO POR LIBRA	ARTE	CANTIDAD O TAMAÑO DE ARTE
(116) GUAYMEN AMARILLO				
(118) JUREL OJUN				
(102) JURELES				
(192) LOROS				
(051) CABRILLA				
(019) CIERNA				
(091) GUANIL				
(046) GUASA				
(080) MANTEQUILLA				
(019) MIGROS				
(147) MOJARRAS				
(136) XRAYADO				
(142) DESUGO				
(143) CARTUCHIO				
(140) COLIRRUDIA				
(139) CHILLO				
(144) AUNIAMA DE AFUERA				
(138) NEGRA O ALNEGRA				
(134) SANA				
(130) PARGUS				
(251) PUE PUERU				
(202) PICUAS				
(164) PLUMAS				
(073) BOQUALOS				
(176) SALAIONETE AMARILLO				
(175) SALAIONETE COLORAO				
(016) SARDINAS				
(234) SIERRA ALASANA				
(233) SIERRA CARITE				
(001) TIBURONES				
CLASE DE MARISCO	PESO	PRECIO POR LIBRA	ARTE	CANTIDAD O TAMAÑO DE ARTE
(906) CANGREJOS MARINOS				
(900) CARRUCHIO				
(904) JUEY DE TIERRA				
(901) LANGOSTA				
(901) OSTION				
(901) PULPO				
(901) OTROS MARISCOS				

Figure 2. Landings data Collection ticket. Continued.

Figure 3. Biostatistical Data Collection Sheet

PUERTO RICO FSP BIOSTATISTICS DATA SHEET

Fishermen or Business name

Date

month	day	year
-------	-----	------

Interview Number (Sequence)

Port Agent Initials

--	--

Fishing Center

Fishing Location

Latitude
Longitude

Landing Type

C	I
---	---

Distant from shore

> 10NM	< 10NM
--------	--------

Gear Code

--	--	--

Total Weight (pounds)

Total Effort

Gear Code	Gear Amount	Length (Fathoms)	# of Sets	Mesh Size (Inches)	Soak Time	Fishing Time (Hours)	Max Depth (Fathoms)	Min Depth (Fathoms)	Effort Unit
100									Fathom/Hour
101									Trap/Day
102									Trap/Day
103									Fathom/Hour
104									Hook/Hour
105									Hook/Hour
107									Hook/Hour
109									Fathom/Hour
112									Hook/Hour
114									Diver/Hour
116									Diver/Hour
118									Fathom/Hour

Figure 3. Biostatistical Data Collection Sheet. Continued.

Interview number _____